FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8

CERTIFICATION TEST REPORT

FOR

QUAD-BAND RADIO WITH WLAN AND BT RADIO

MODEL NUMBER: A1529

FCC ID: BCG-E2694A
IC: 579C-E2694A

REPORT NUMBER: 13U15037-12

ISSUE DATE: JULY 22, 2013

Prepared for
APPLE INC
1 INFINITE LOOP
CUPERTINO, CA 95014, U.S.A

Prepared by
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	07/22/13	Initial Issue	T. Chan

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: APPLE
1 INFINITE LOOP
CUPERTINO, CA 95014, U.S.A.

EUT DESCRIPTION: QUAD-BAND RADIO WITH WLAN AND BT RADIO

MODEL: A1529

SERIAL NUMBER: C7JKT0CKFLW6 (DVT-9GW6E-1825)

DATE TESTED: JUNE 17-24, 2013

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 3	Pass

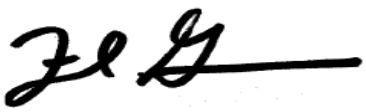
UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL Verification Services Inc. By:

Thu Chan
WiSE Operations Manager
UL Verification Services Inc.

Tested By:



Francisco Guarnero
WiSE Lab Technician
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2009, RSS-GEN Issue 3, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT, Model A1529 is a mobile phone with multimedia functions (music, application support, and video), cellular GSM/GPRS/EGPRS/WCDMA/HSPA+/DC-HSDPA/LTE radio, IEEE 802.11a/b/g/n, Bluetooth and GPS radio. The rechargeable battery is not user accessible.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	19.64	92.04
2412 - 2462	802.11g	25.16	328.10
2412 - 2462	802.11n HT20	25.08	322.11
5745 - 5825	802.11a	22.19	165.58
5745 - 5825	802.11n HT20	21.59	144.21
5755 - 5795	802.11n HT40	21.95	156.68

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna, with a maximum gain as below table.

FREQUENCY (MHZ)	ANTENNA GAIN (dBi)
2400 – 2483.5	0.21
5150 -- 5250	-0.73
5250 -- 5350	-0.37
5500 -- 5700	1.31
5725 -- 5850	1.59

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was WL Tool FW 6.10.56.166

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that X orientation was worst-case orientation for 2.4GHz and 5GHz ; therefore, all final radiated testing was performed with the EUT in worst case orientation.

Worst-case data rates as provided by the client were:
Based on the baseline scan, the worst-case data rates were:

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11a mode: 6 Mbps
802.11n HT20mode: MCS0
802.11n HT40mode: MCS0

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List			
Description	**Manufacturer**	**Model**	**Serial Number**
AC adapter	Apple	A1385	D292365D11QDHLHCA
Earphone	Apple	NA	NA

I/O CABLES (Conducted Setup)

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	Antenna	1	SMA	Shielded	0.1m	To Spectrum Analyzer

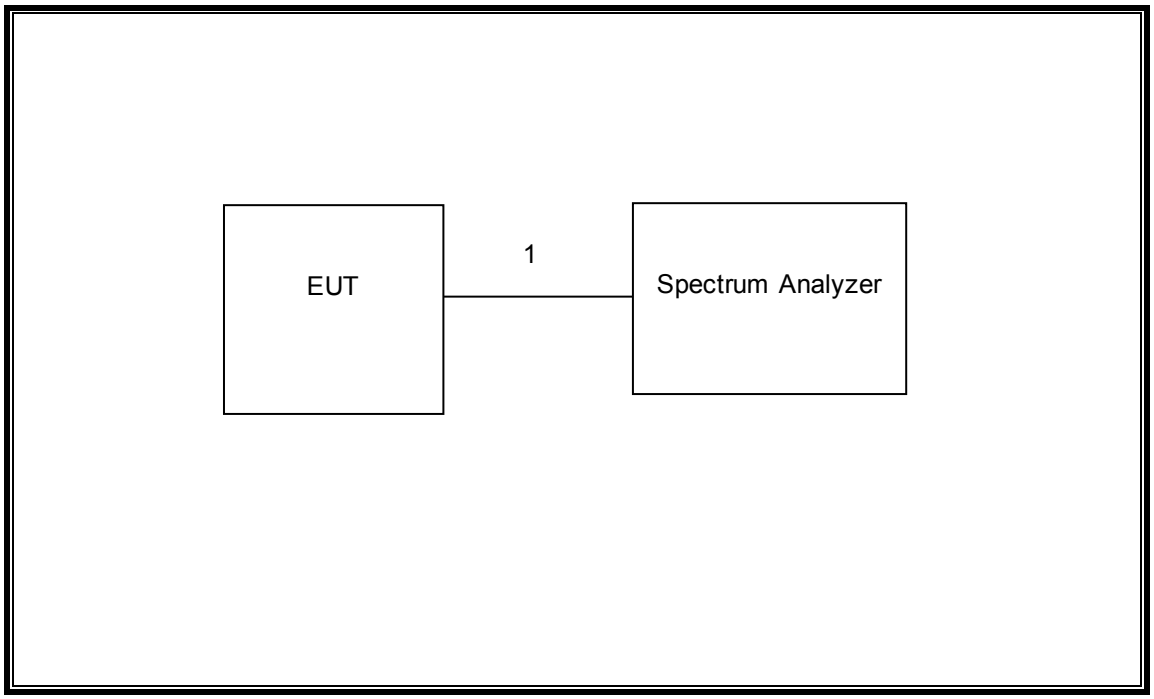
I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	Jack	1	Earphone	Unshielded	0.5m	N/A

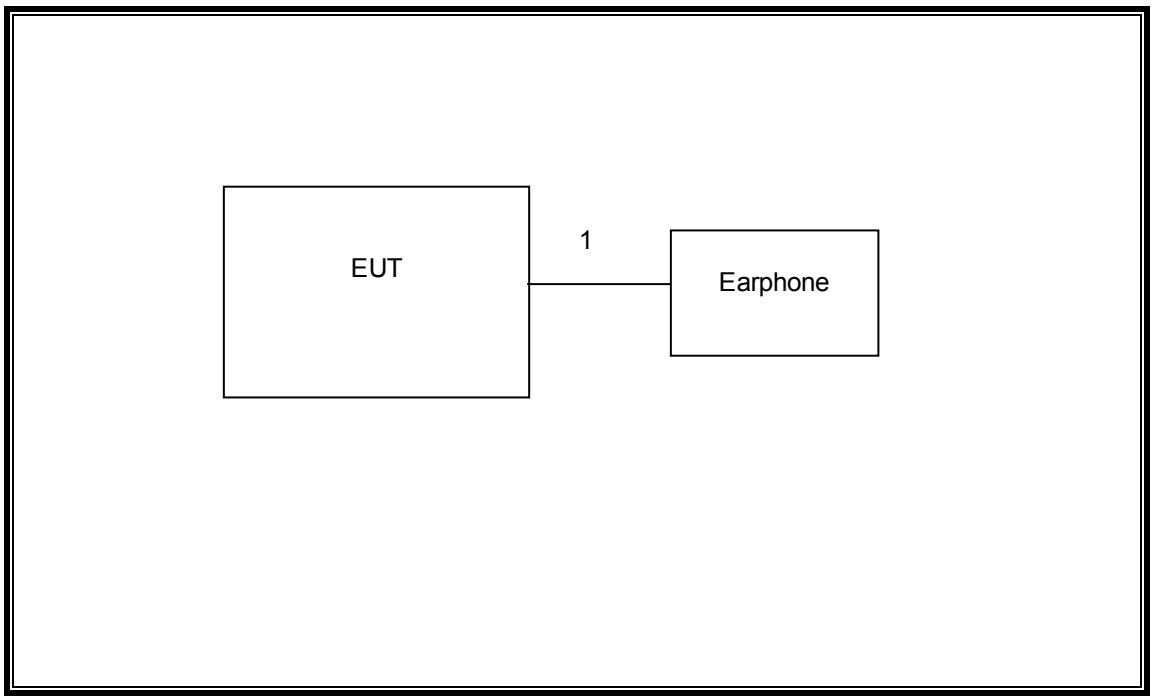
TEST SETUP

The EUT is a stand-alone device.

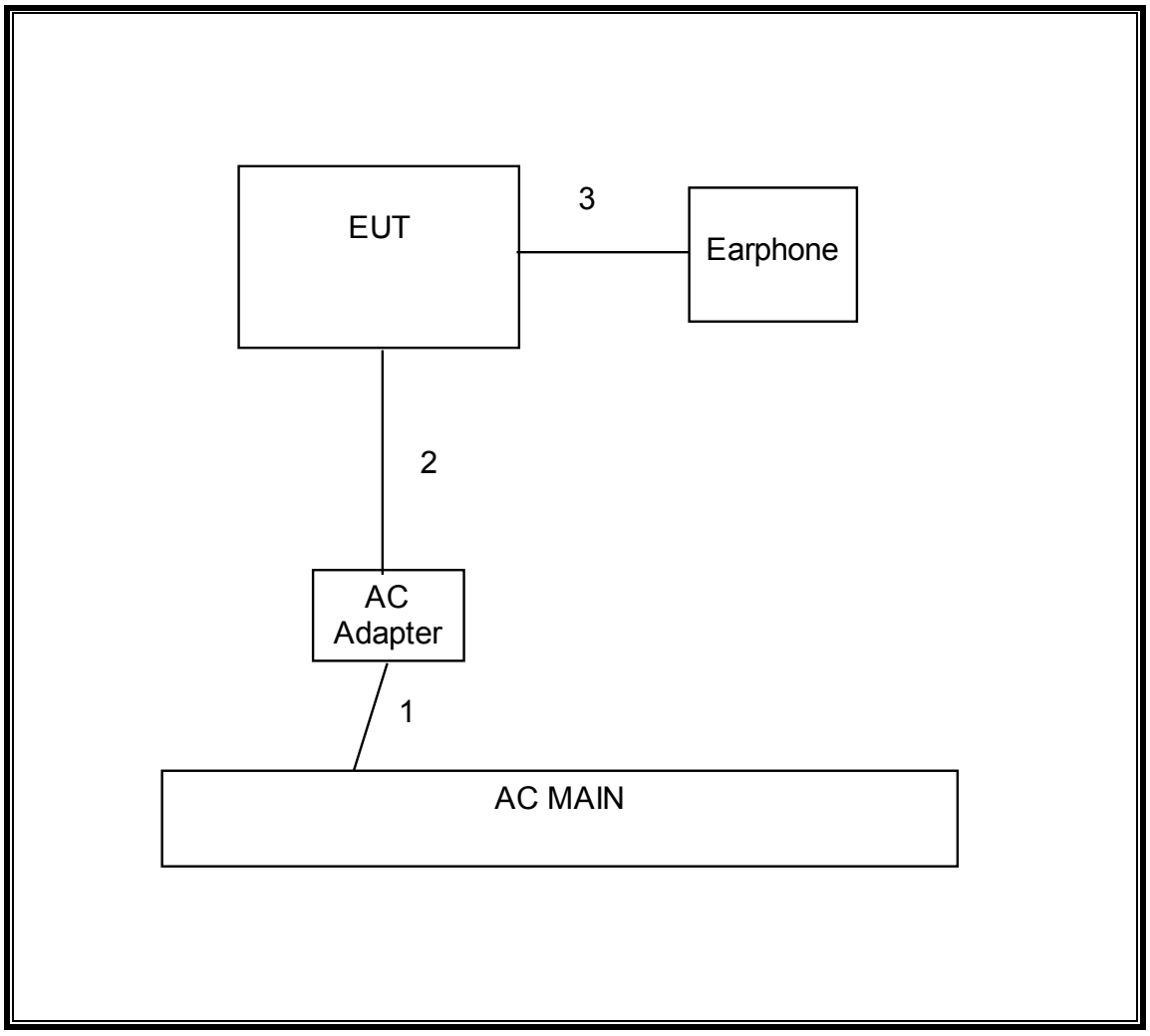
SETUP DIAGRAM FOR TESTS



SETUP DIAGRAM FOR RADIATED TESTS



SETUP DIAGRAM FOR AC POWER CONDUCTED TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Horn Antenna 1-18GHz	ETS Lindgren	3117	F00133	02/19/14
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	01/28/14
Antenna, Horn, 26.5 GHz	ARA	SWH-28	C01015	05/06/14
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB3	F00215	03/07/14
Peak / Average Power Sensor	Agilent / HP	E9323A	F00026	07/27/13
P-Series single channel Power Meter	Agilent / HP	N1911A	F00153	07/26/13
Spectrum Analyzer, 3Hz-44GHz	Agilent	N9030A	F00127	02/22/14
PreApmplifier, 1-26.5GHz	Agilent	8449B	C01052	10/22/13
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	04/17/14
Antenna, Horn, 40 GHz	ARA	MWH-2640/B	C00981	06/14/14
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/08/13
Preamplifier, 40 GHz	Miteq	NSP4000-SP2	C00990	08/02/13

MEASUREMENT METHODS

KDB 558074 Measurement Procedure PK2 is used for power and PKPSD is used for power spectral density.

KDB 558074 Measurement Procedure AVG1 is used for power and PKAVG is used for power spectral density.

KDB 558074 Measurement Procedure AVG2 is used for power and PKAVG is used for power spectral density.

Unwanted emissions within Restricted Bands are measured using traditional radiated procedures.

7. ANTENNA PORT TEST RESULTS

7.1. 2.4 GHz BAND

7.1.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

KDB 558074 D01 v01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247".

RESULTS

b Mode

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	8.556	0.5
Mid	2437	8.076	0.5
High	2462	8.088	0.5

g Mode

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.376	0.5
Mid	2437	16.434	0.5
High	2462	16.491	0.5

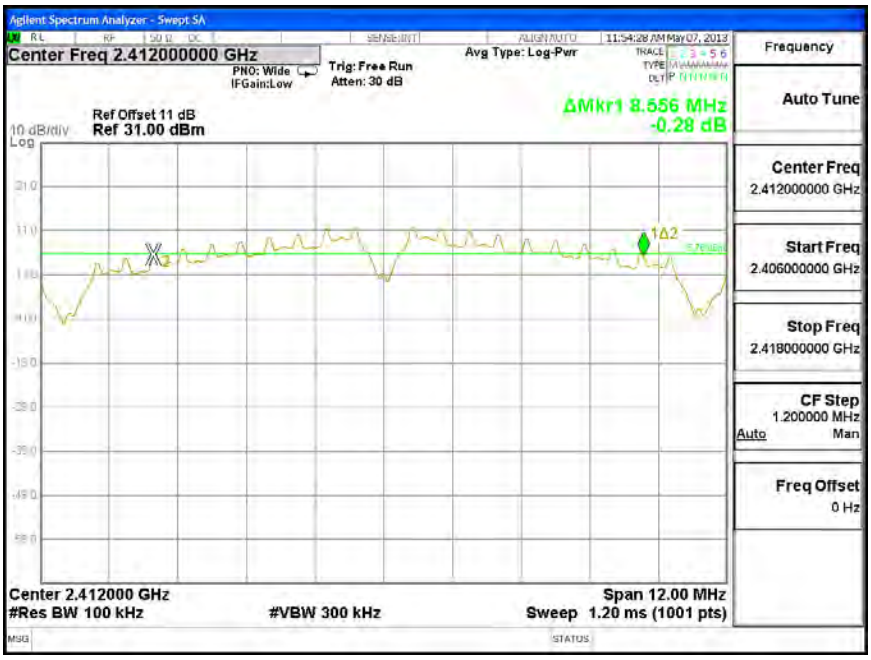
HT20

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.411	0.5
Mid	2437	17.630	0.5
High	2462	17.676	0.5

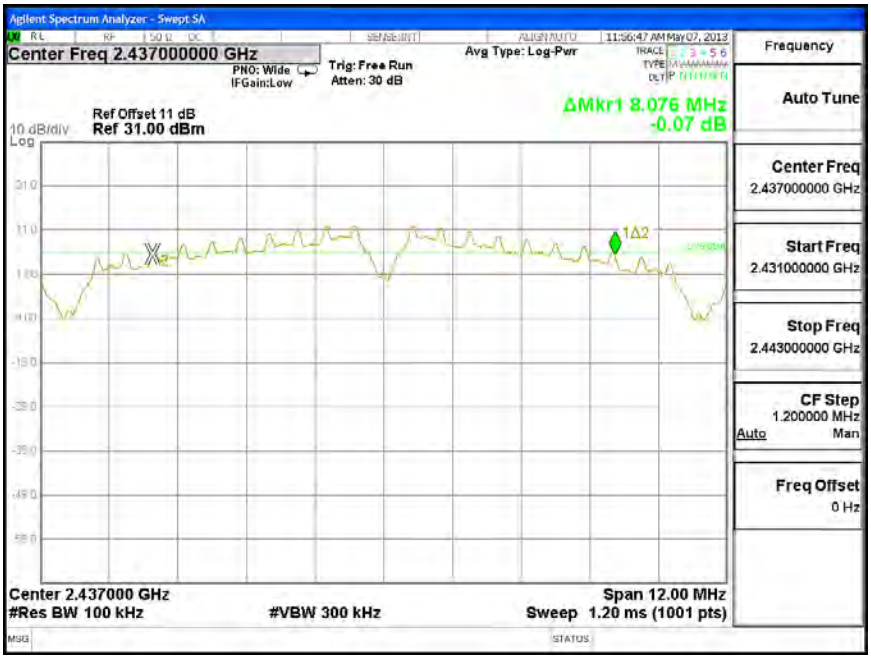
b mode

6 dB BANDWIDTH

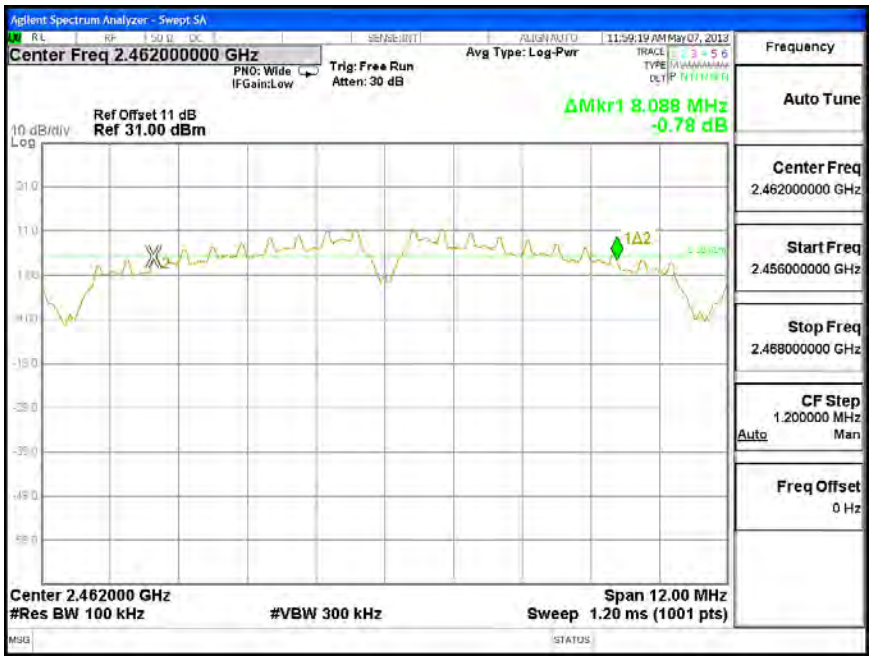
6 dB BANDWIDTH LOW CH



6 dB BANDWIDTH MID CH



6 dB BANDWIDTH HIGH CH

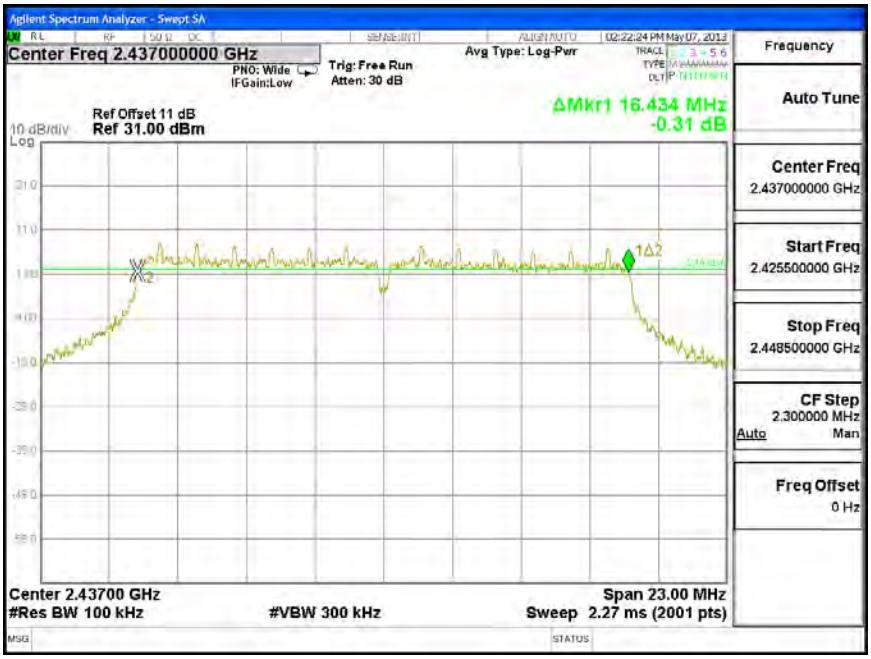


g mode

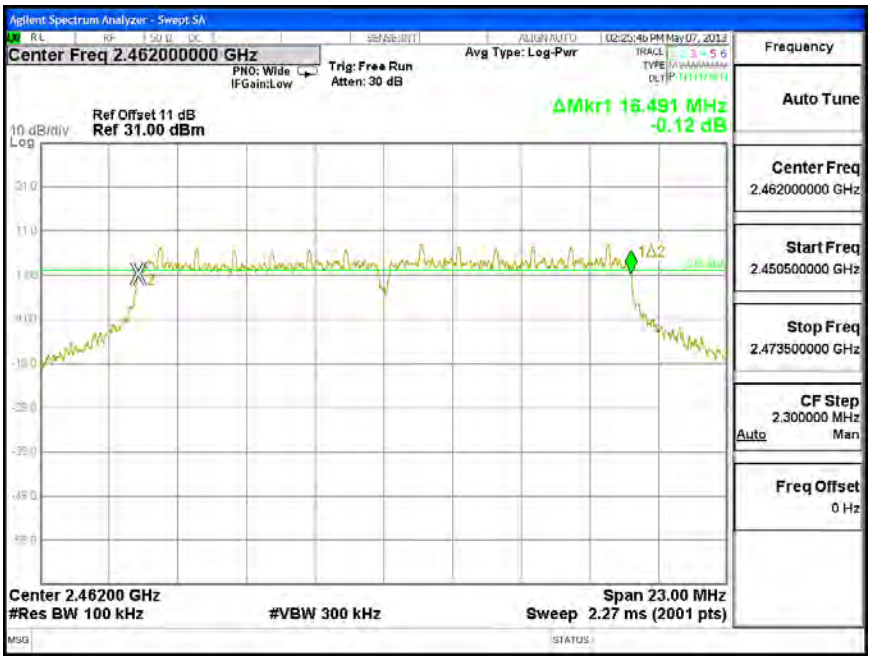
6 dB BANDWIDTH

6 dB BANDWIDTH LOW CH

6 dB BANDWIDTH MID CH



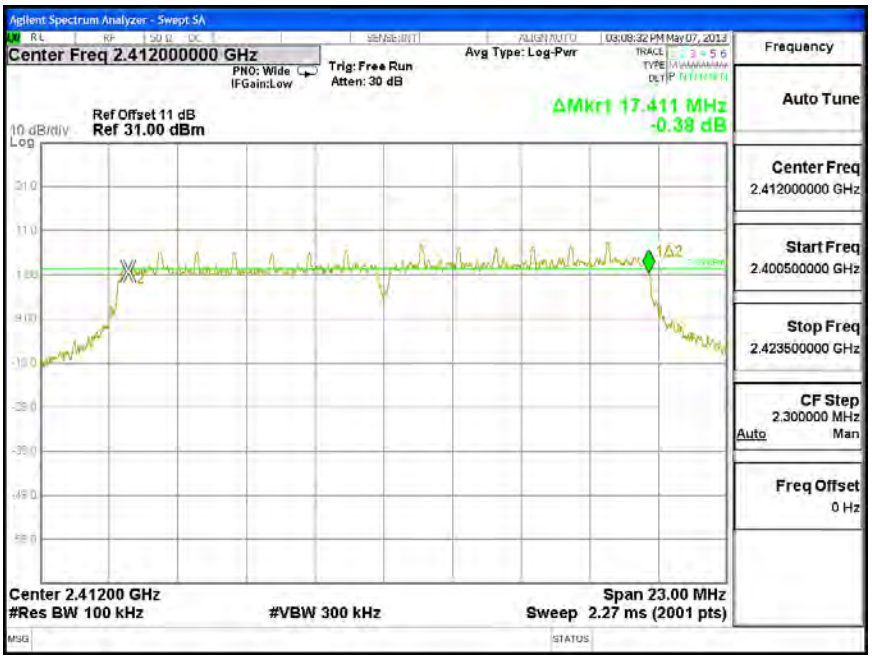
6 dB BANDWIDTH HIGH CH



HT20

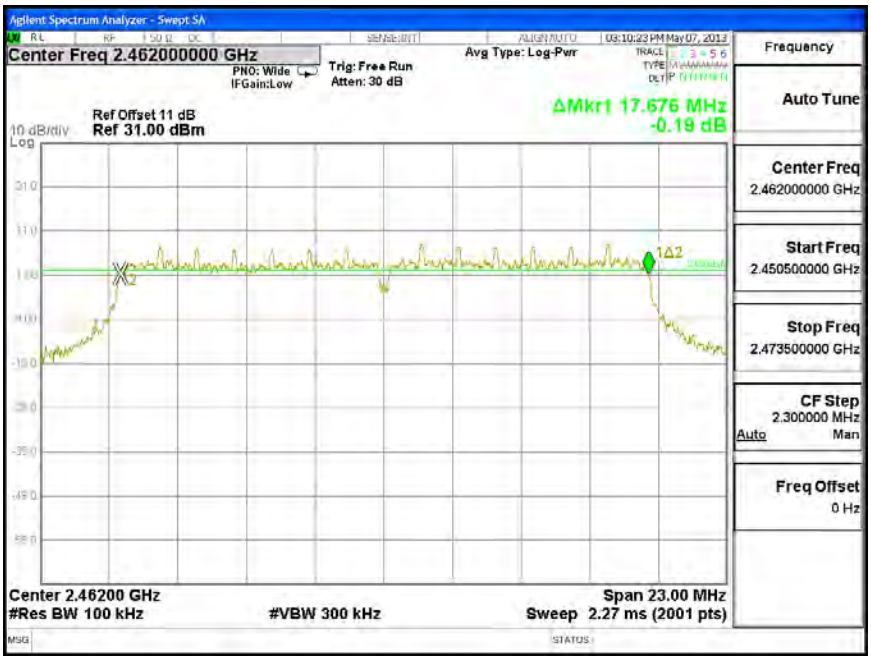
6 dB BANDWIDTH

6 dB BANDWIDTH LOW CH



6 dB BANDWIDTH MID CH

6 dB BANDWIDTH HIGH CH



7.1.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

b Mode

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	12.6060
Mid	2437	12.5900
High	2462	12.2920

g mode

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.6810
Mid	2437	16.5840
High	2462	16.6870

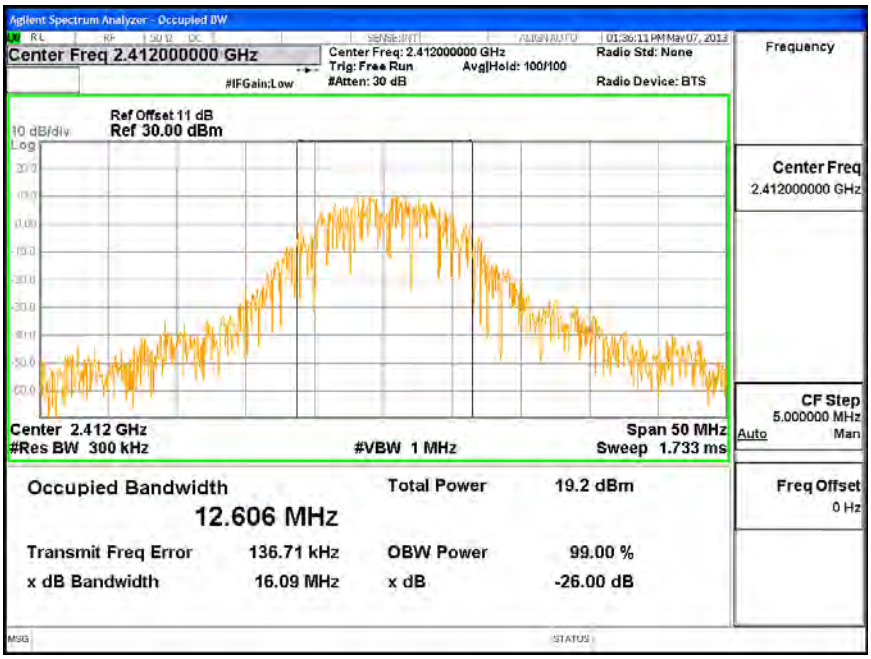
HT20

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.8860
Mid	2437	17.7810
High	2462	17.9130

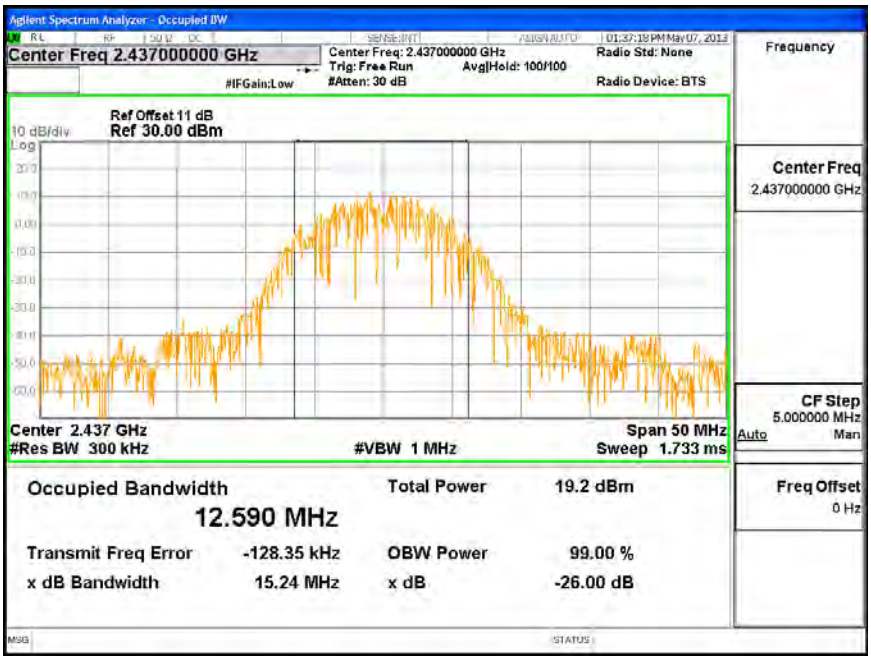
b mode

99% BANDWIDTH

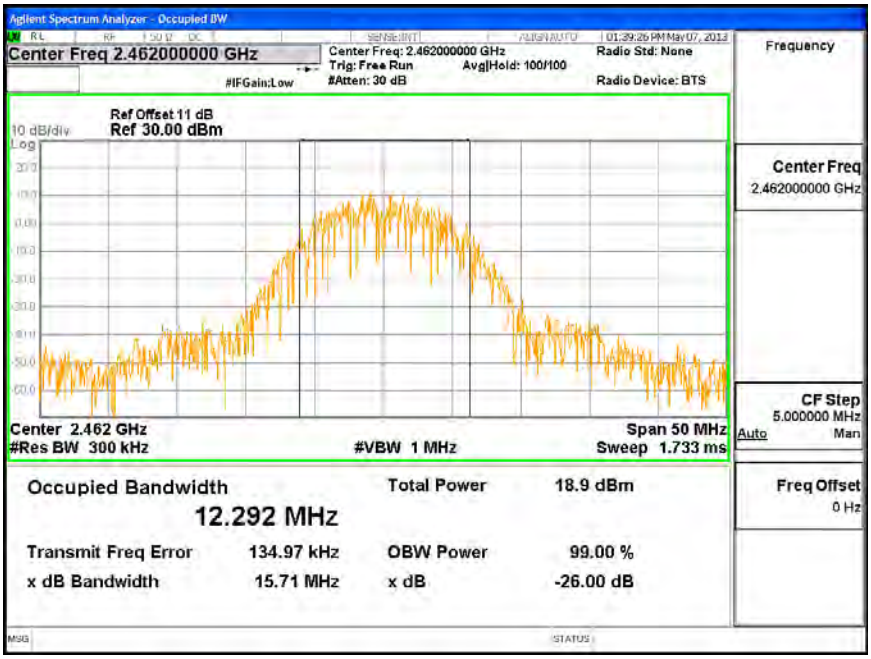
99% BANDWIDTH LOW CH



99% BANDWIDTH MID CH



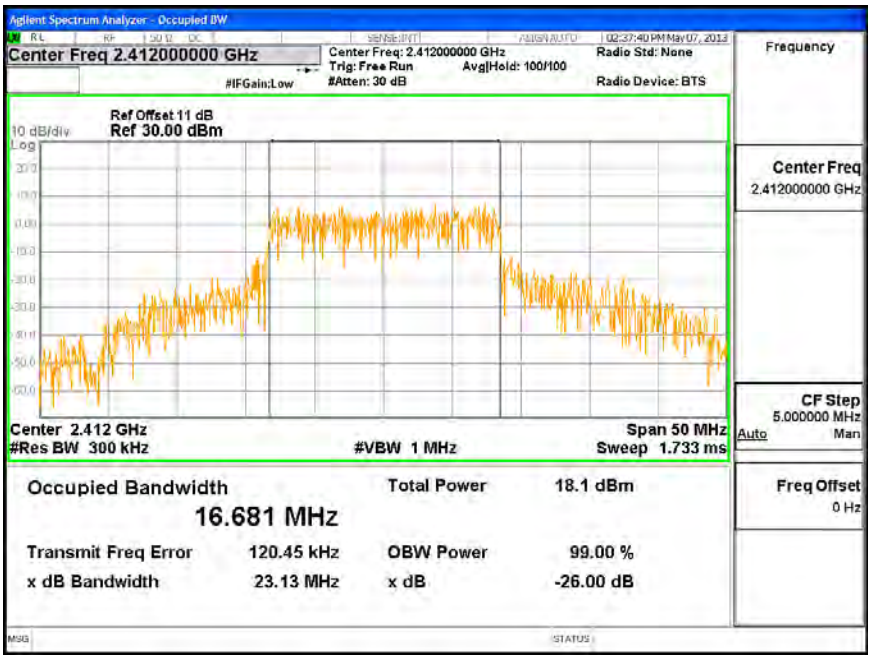
99% BANDWIDTH HIGH CH



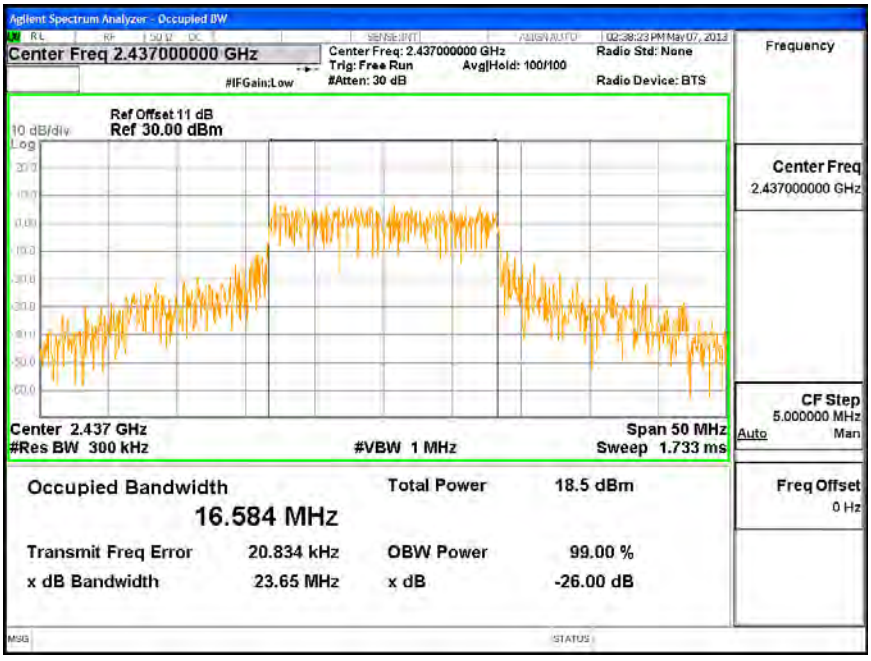
g mode

99% BANDWIDTH

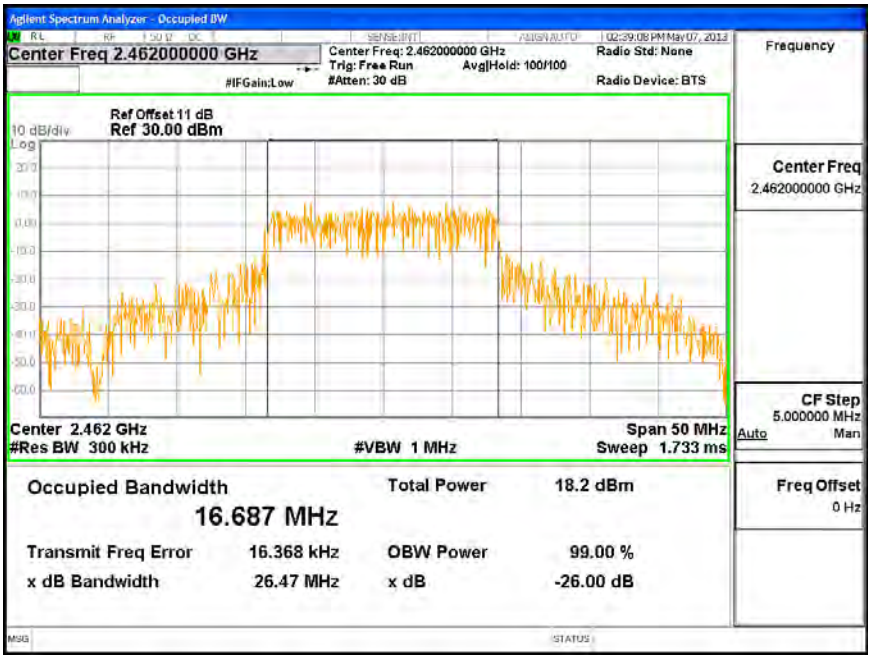
99% BANDWIDTH LOW CH



99% BANDWIDTH MID CH



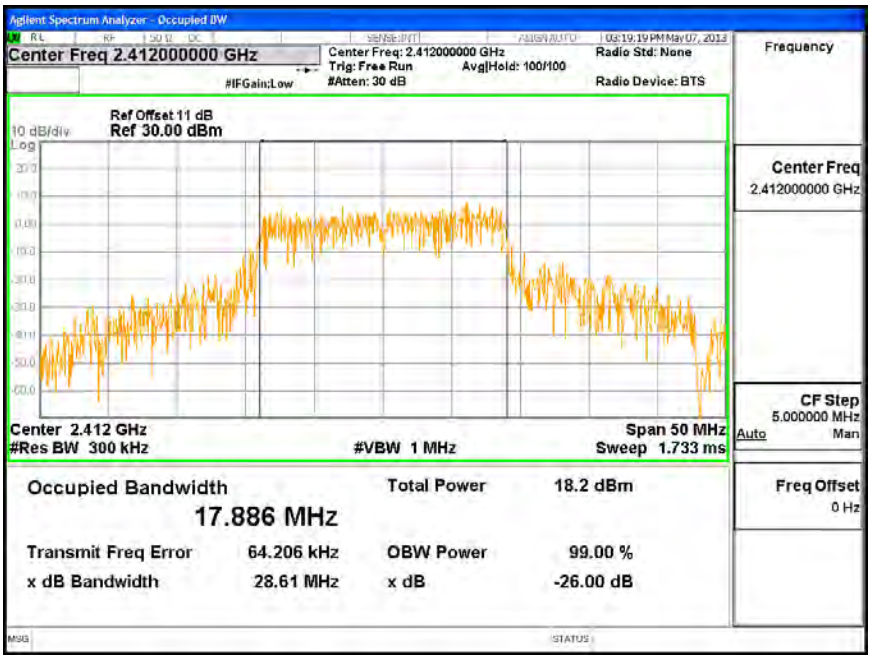
99% BANDWIDTH HIGH CH



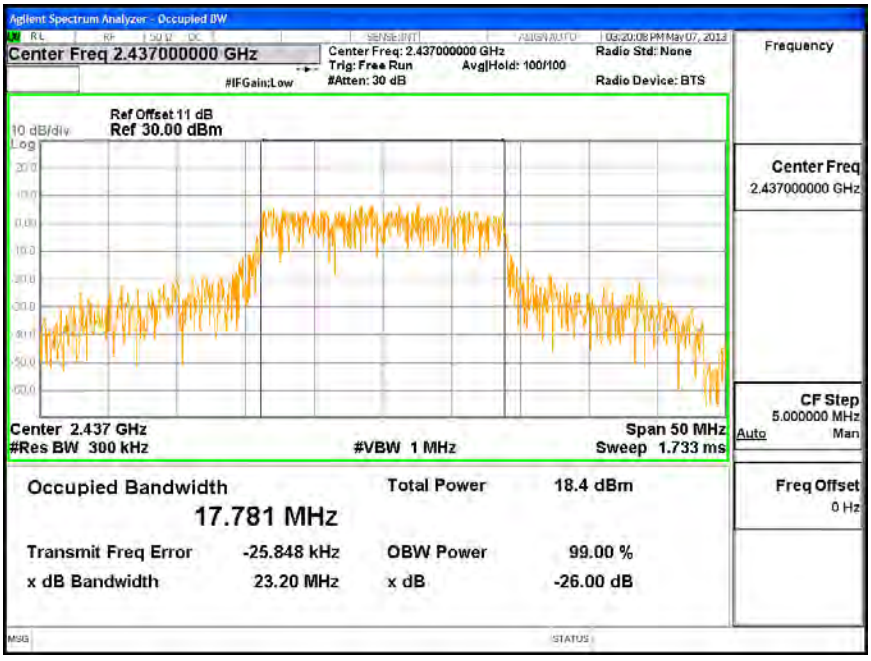
HT20

99% BANDWIDTH

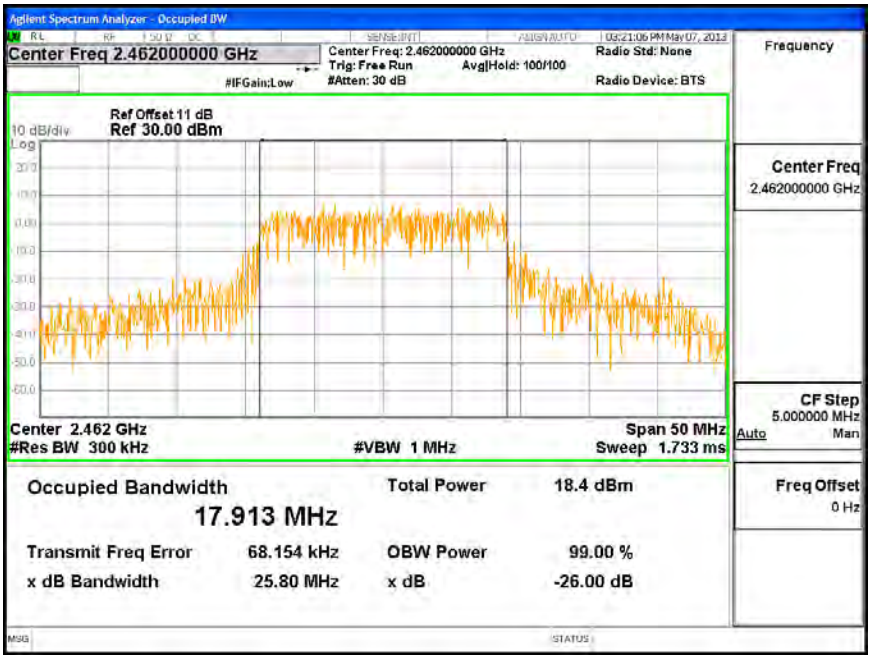
99% BANDWIDTH LOW CH



99% BANDWIDTH MID CH



99% BANDWIDTH HIGH CH



7.1.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

b mode

Channel	Frequency (MHz)	Power (dBm)
Low	2412	16.00
Mid	2437	17.00
High	2462	15.95

g mode

Channel	Frequency (MHz)	Power (dBm)
Low	2412	15.96
Mid	2437	17.06
High	2462	16.00

HT20

Channel	Frequency (MHz)	Power (dBm)
Low	2412	16.00
Mid	2437	17.10
High	2462	15.95

7.1.4. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-210 A8.4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

b mode

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	1.00	30.00	30	36	30.00
Mid	2437	1.00	30.00	30	36	30.00
High	2462	1.00	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	19.500	19.50	30.00	-10.50
Mid	2437	19.641	19.64	30.00	-10.36
High	2462	19.520	19.52	30.00	-10.48

g mode

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	1.00	30.00	30	36	30.00
Mid	2437	1.00	30.00	30	36	30.00
High	2462	1.00	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	25.157	25.16	30.00	-4.84
Mid	2437	25.149	25.15	30.00	-4.85
High	2462	25.140	25.14	30.00	-4.86

HT20

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	1.00	30.00	30	36	30.00
Mid	2437	1.00	30.00	30	36	30.00
High	2462	1.00	30.00	30	36	30.00

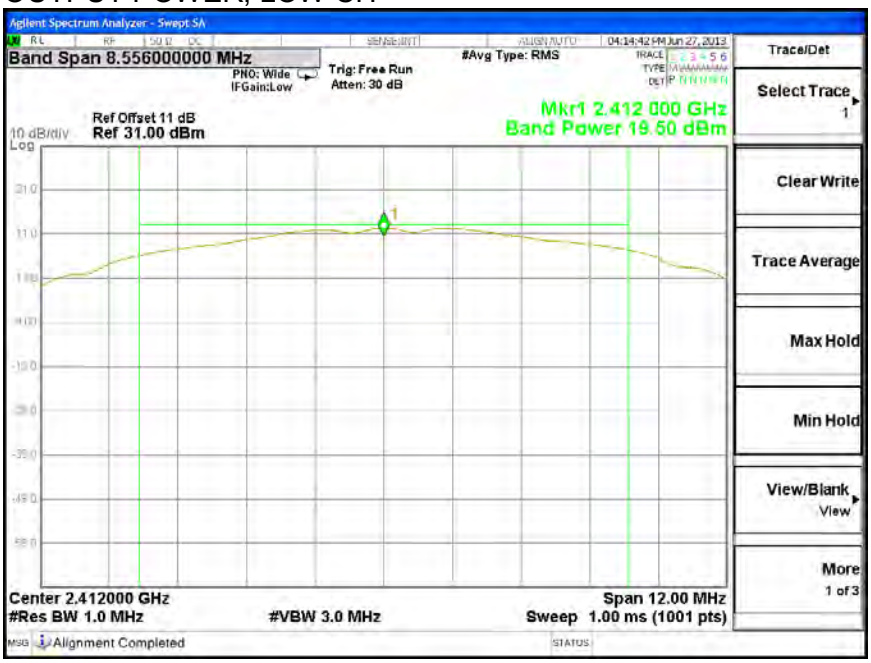
Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	24.939	24.94	30.00	-5.06
Mid	2437	25.080	25.08	30.00	-4.92
High	2462	25.022	25.02	30.00	-4.98

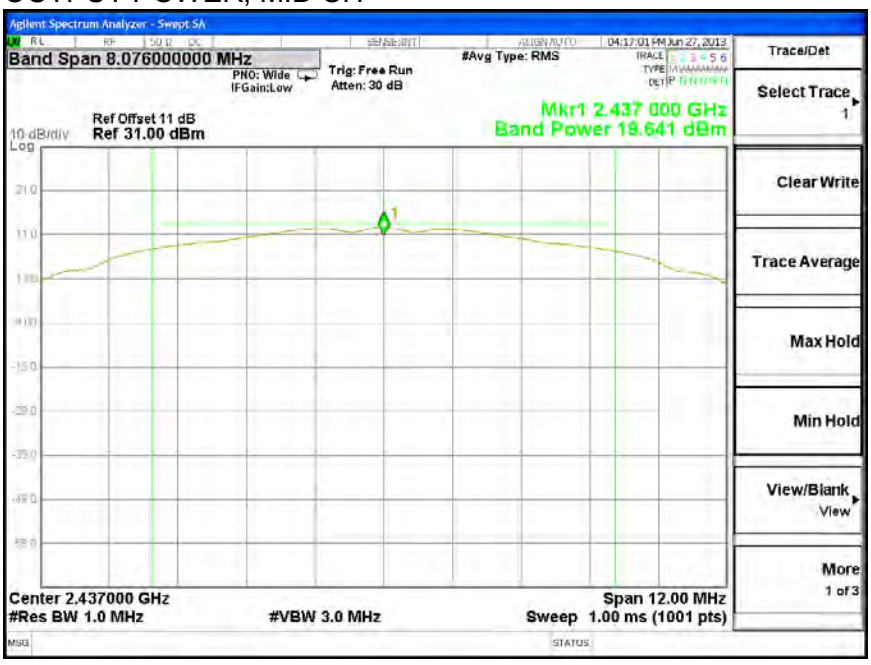
b mode

OUTPUT POWER

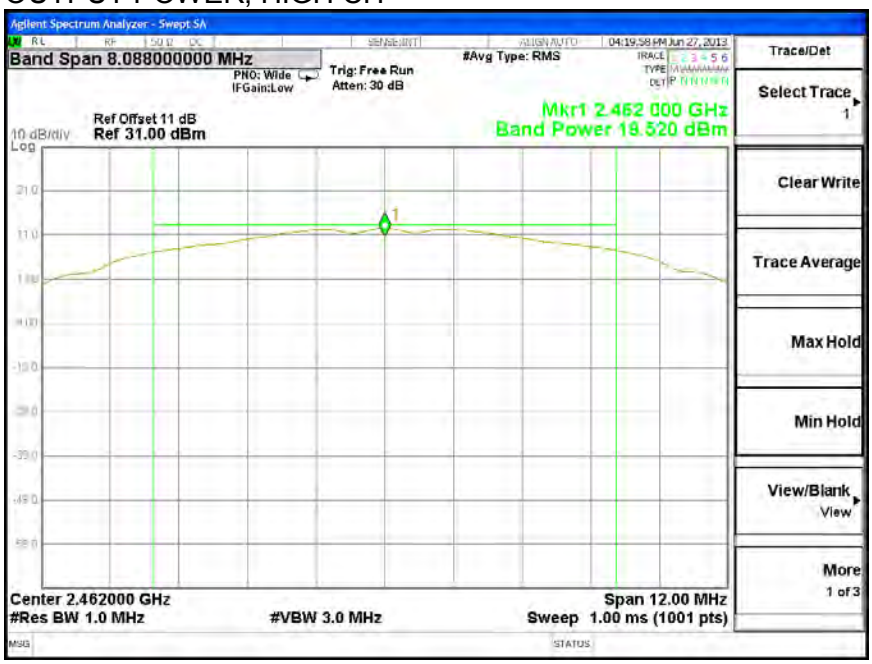
OUTPUT POWER, LOW CH



OUTPUT POWER, MID CH



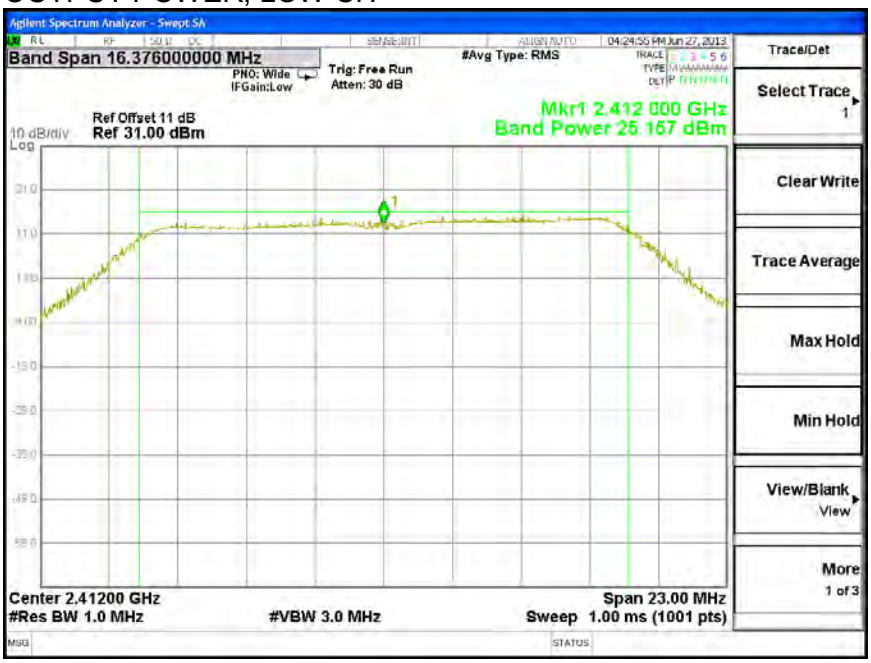
OUTPUT POWER, HIGH CH



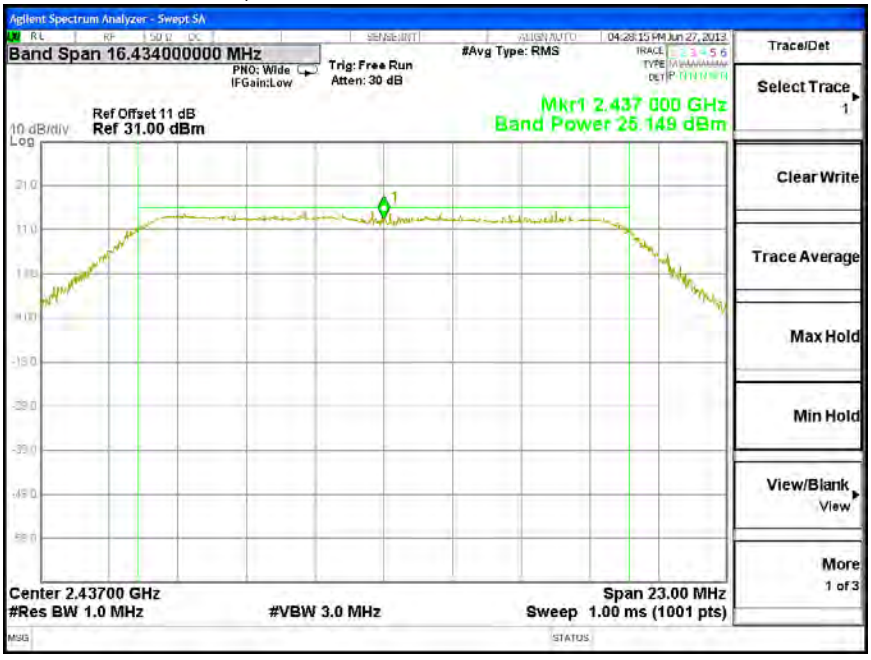
g mode

OUTPUT POWER

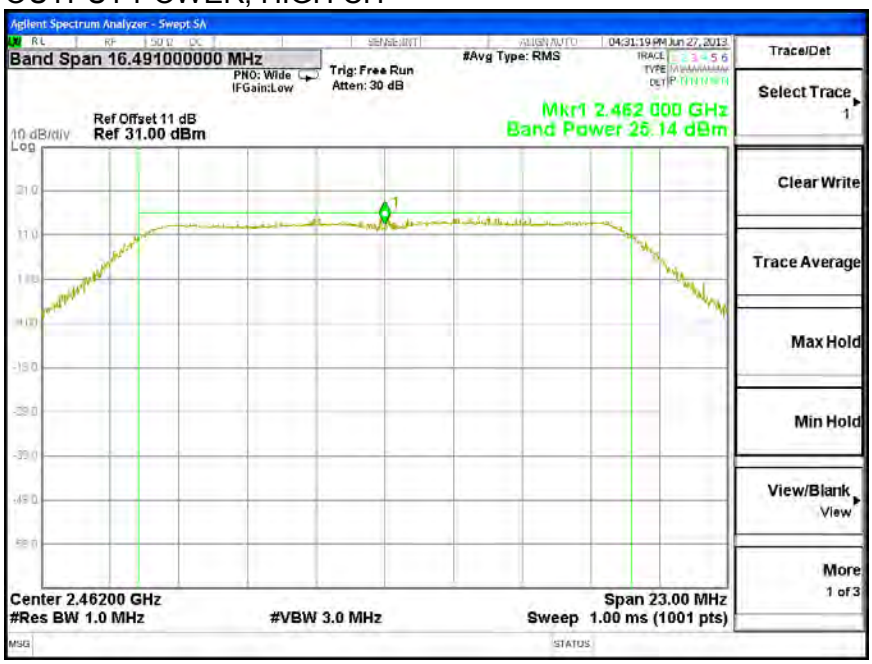
OUTPUT POWER, LOW CH



OUTPUT POWER, MID CH



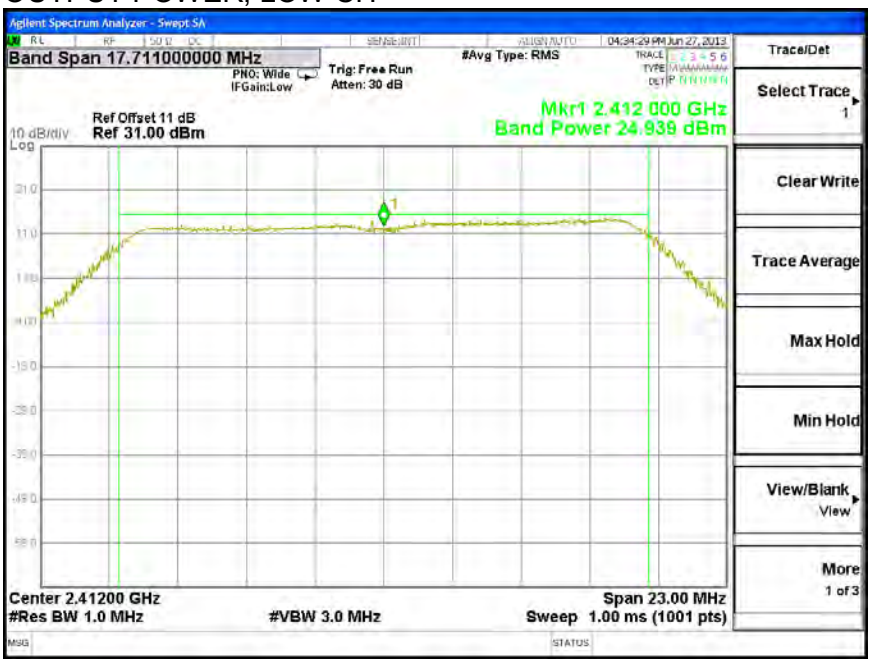
OUTPUT POWER, HIGH CH



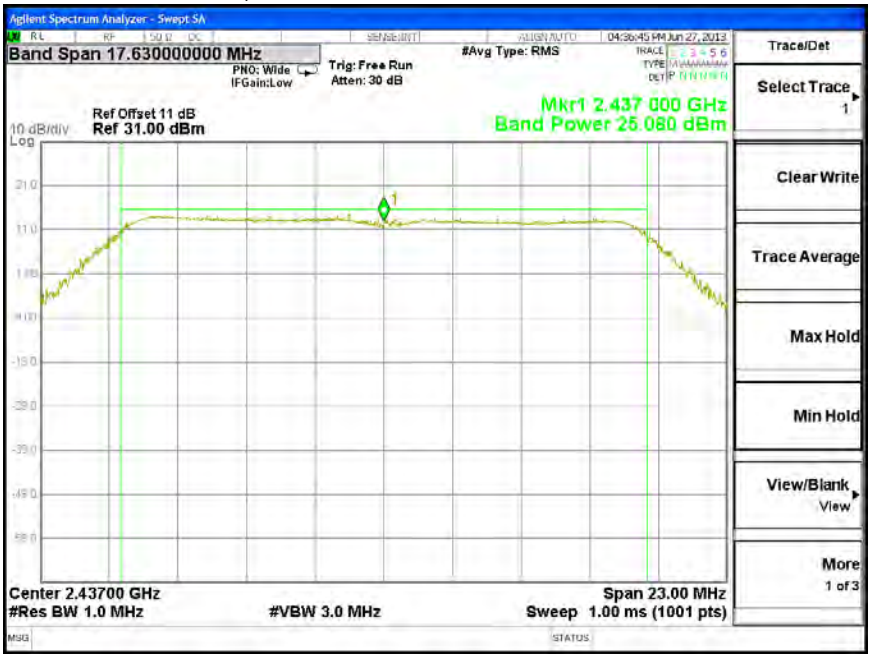
HT20

OUTPUT POWER

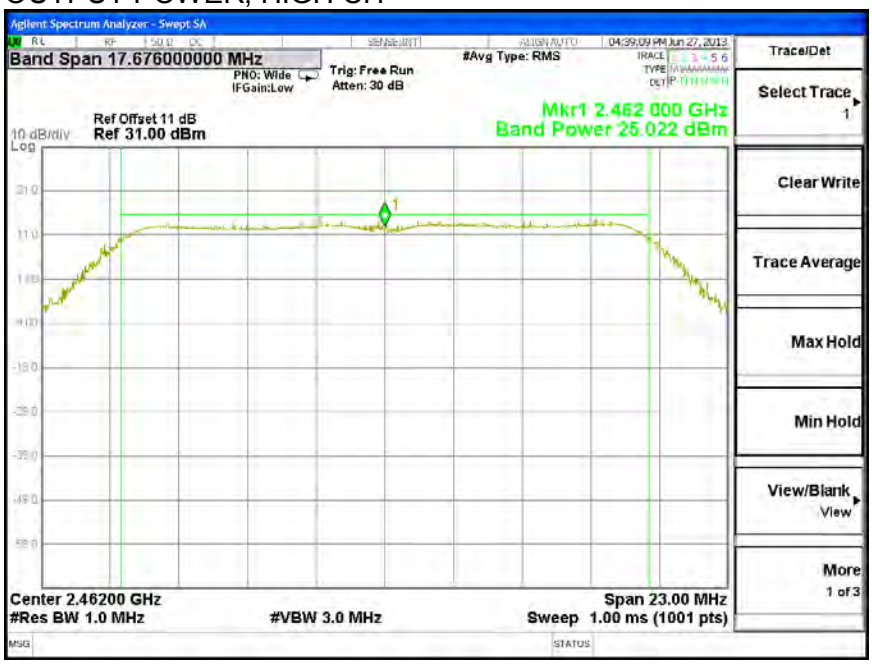
OUTPUT POWER, LOW CH



OUTPUT POWER, MID CH



OUTPUT POWER, HIGH CH



7.1.5. PSD

LIMITS

FCC §15.247

IC RSS-210 A8.2

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

b mode

PSD Results

Channel	Frequency (MHz)	Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-2.32	8.0	-10.32
Mid	2437	-2.47	8.0	-10.47
High	2462	-3.07	8.0	-11.07

g mode

PSD Results

Channel	Frequency (MHz)	Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-7.13	8.0	-15.13
Mid	2437	-6.13	8.0	-14.13
High	2462	-7.04	8.0	-15.04

HT20

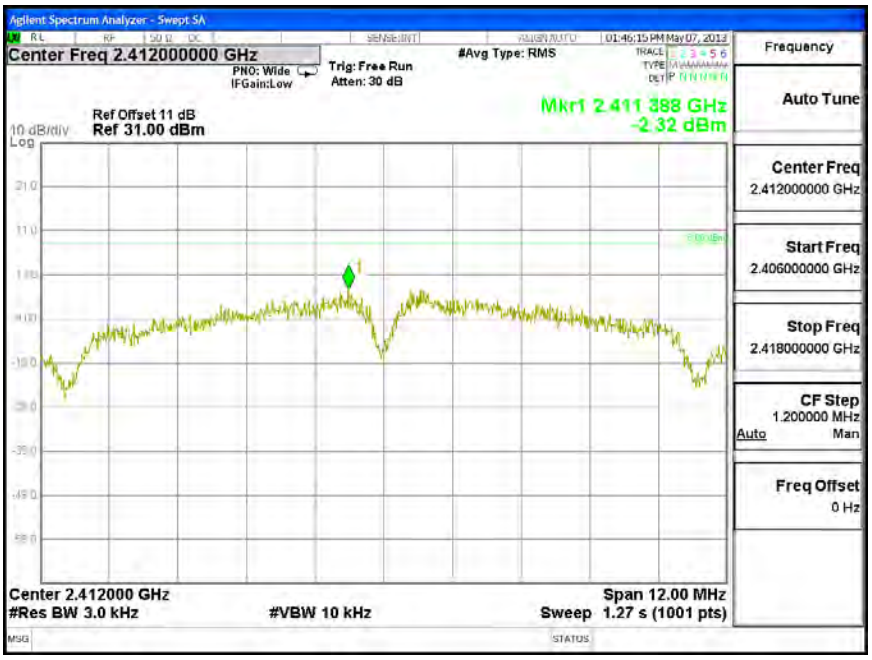
PSD Results

Channel	Frequency (MHz)	Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-6.88	8.0	-14.88
Mid	2437	-6.47	8.0	-14.47
High	2462	-7.02	8.0	-15.02

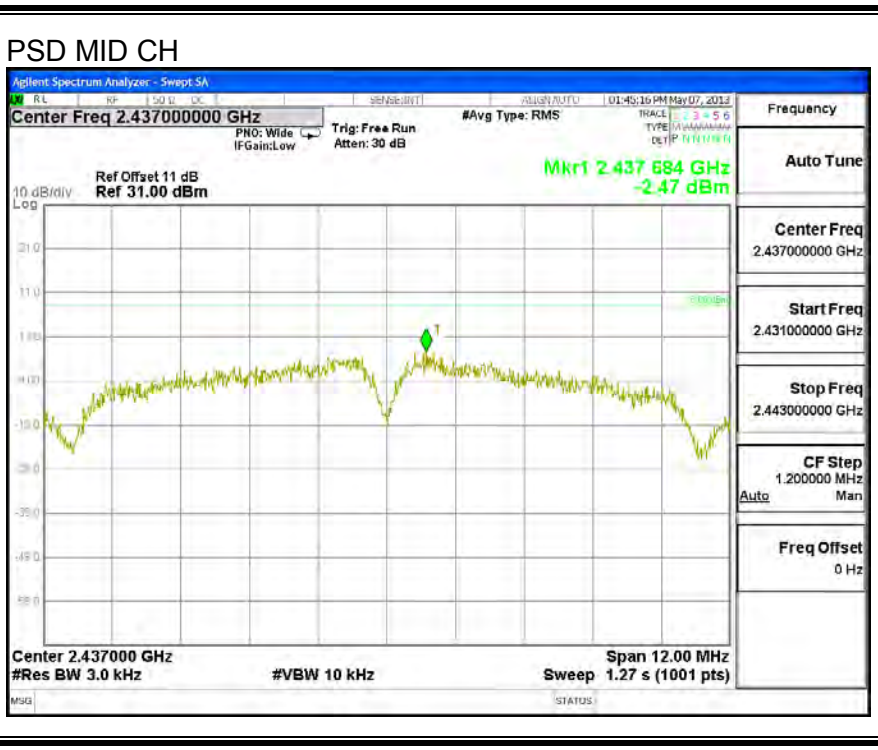
b mode

PSD

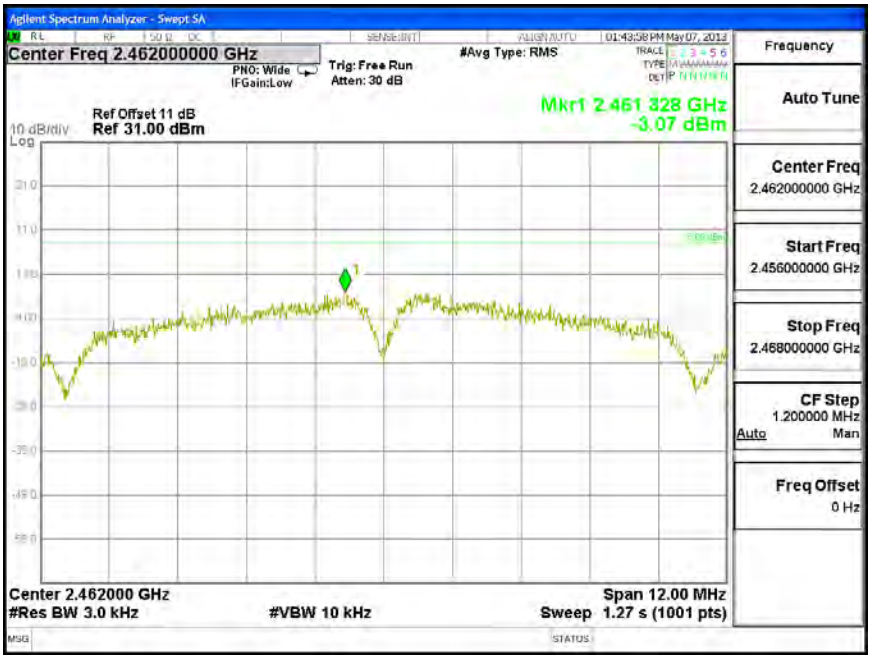
PSD LOW CH



PSD MID CH



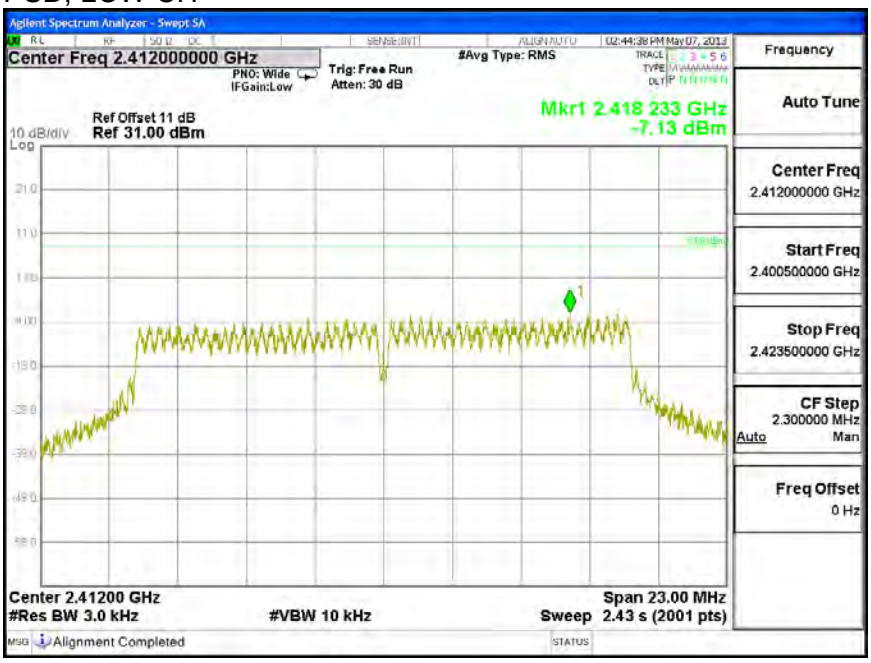
PSD HIGH CH



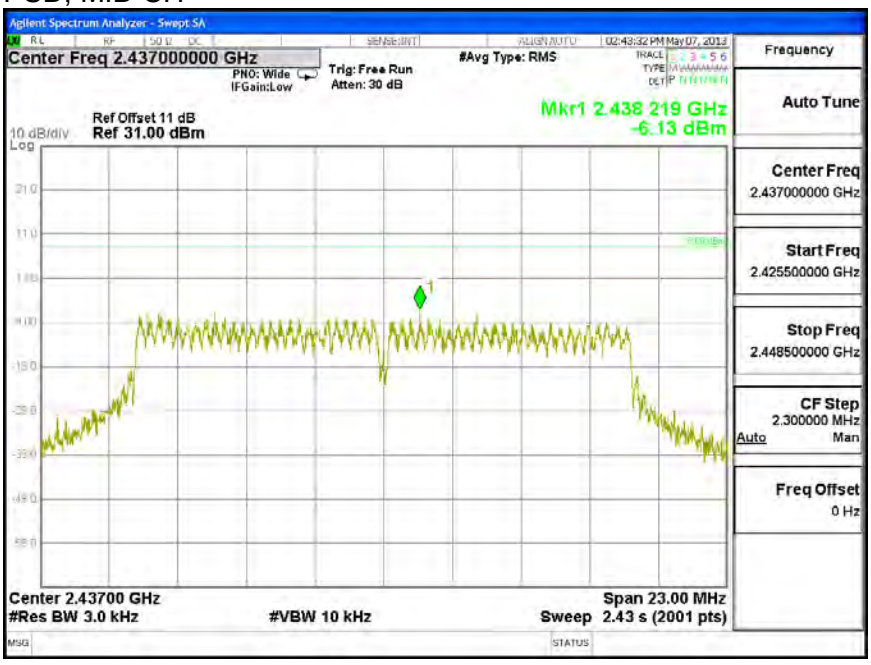
g mode

PSD

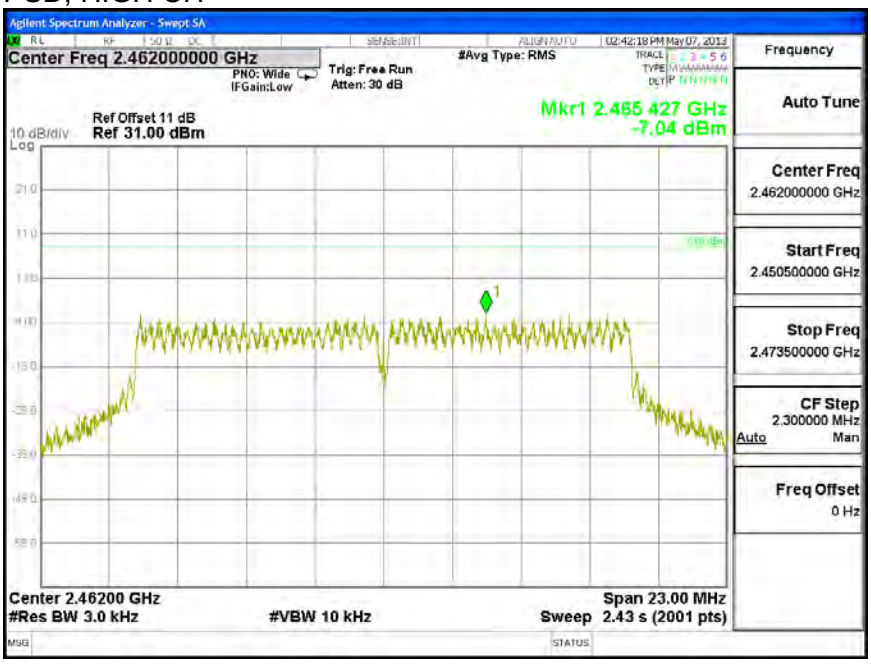
PSD, LOW CH



PSD, MID CH



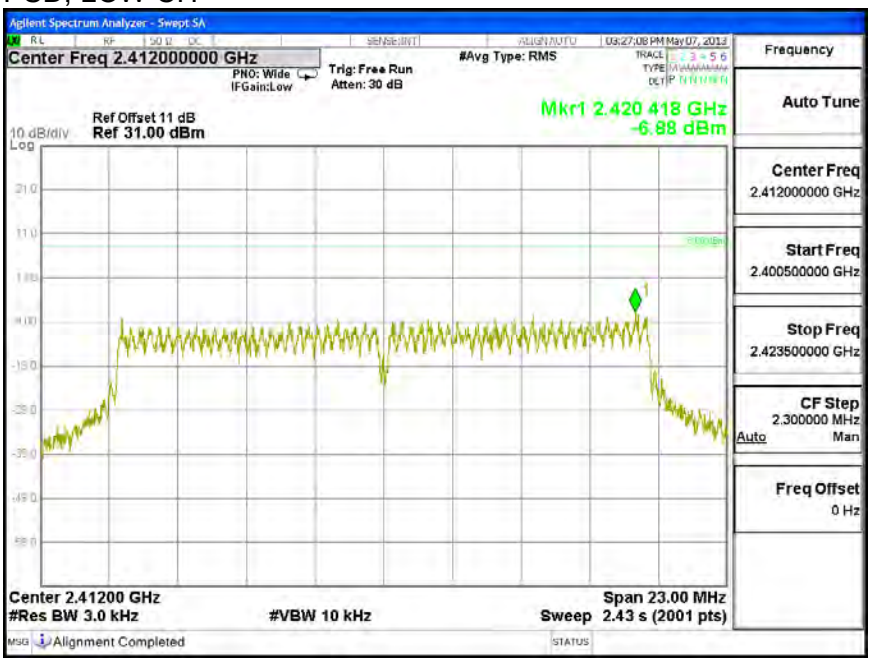
PSD, HIGH CH



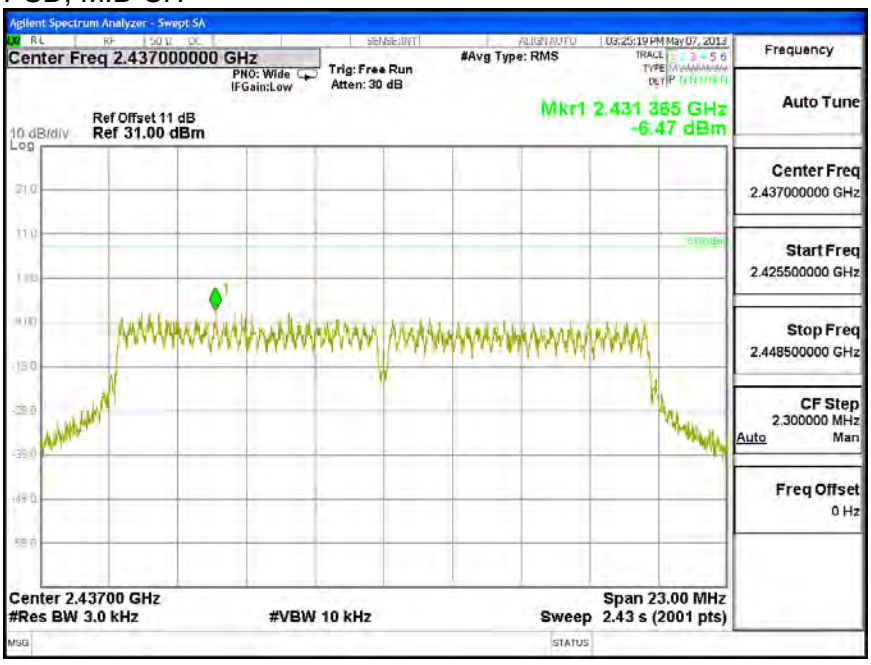
HT20

PSD

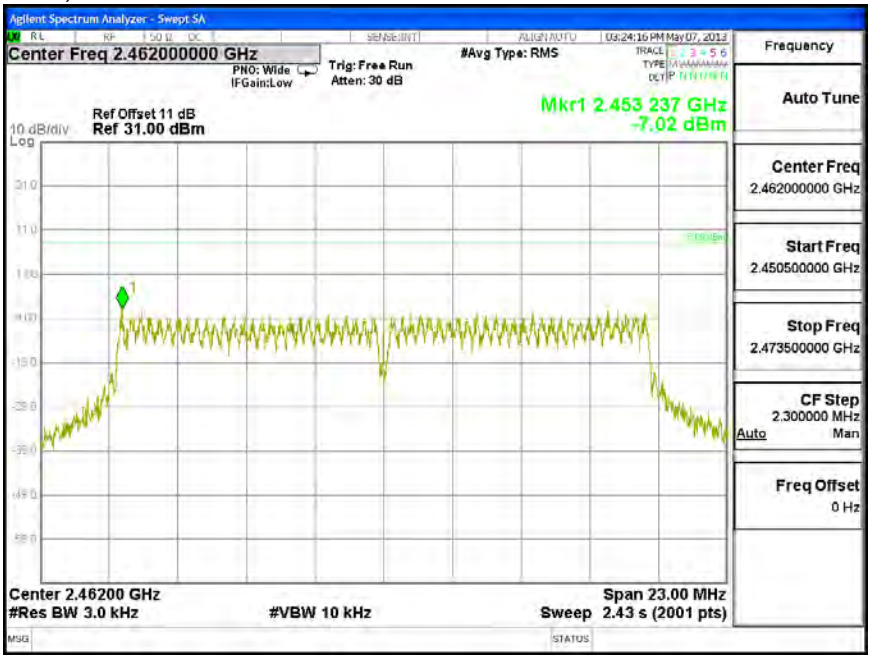
PSD, LOW CH



PSD, MID CH



PSD, HIGH CH



7.1.6. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

TEST PROCEDURE

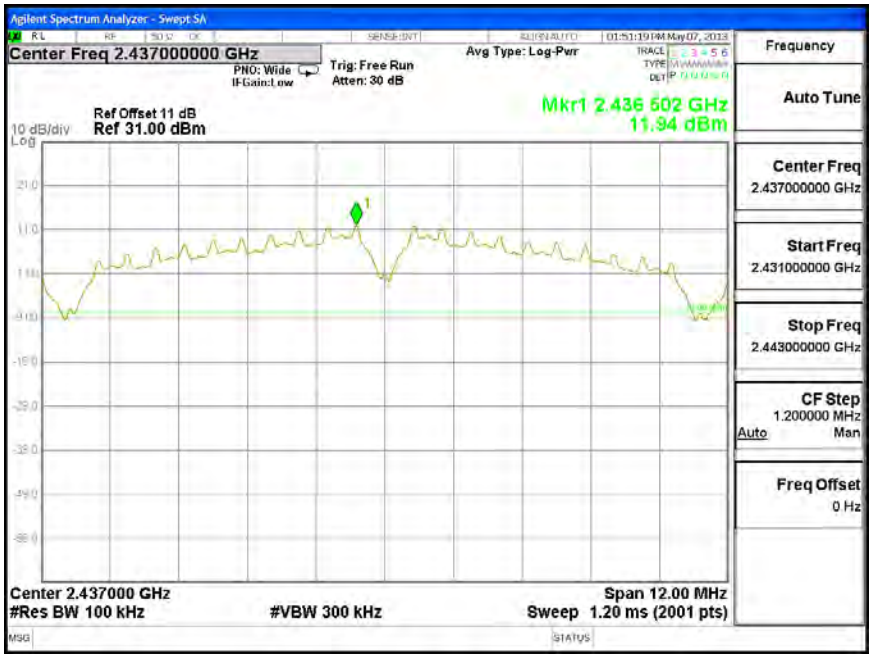
The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

b mode

RESULTS

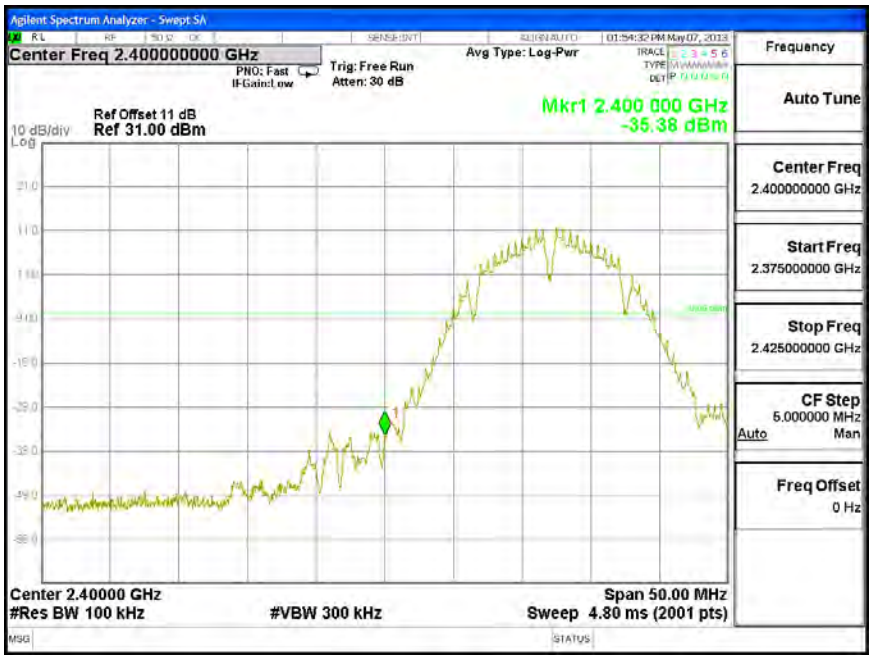
IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



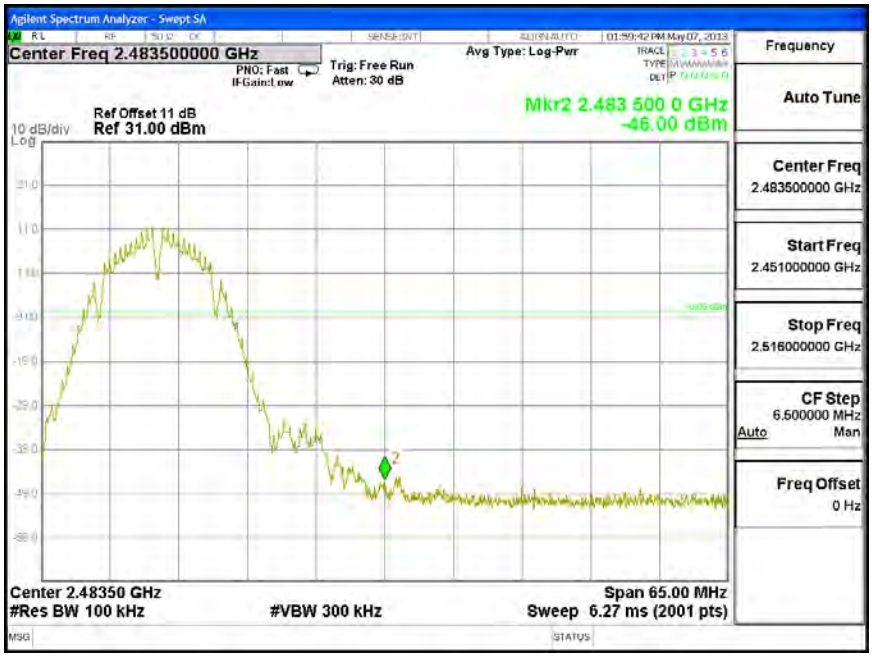
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



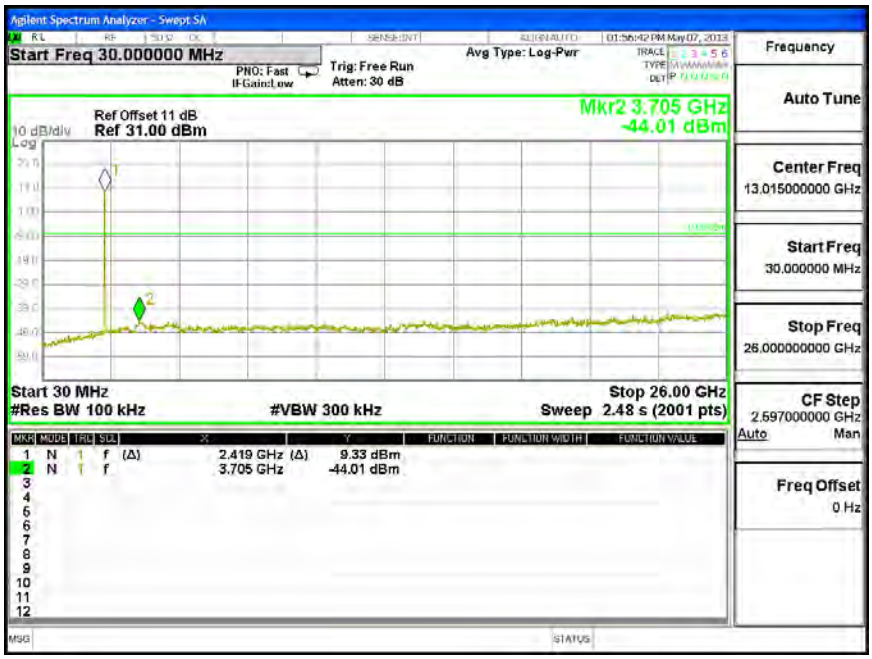
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH

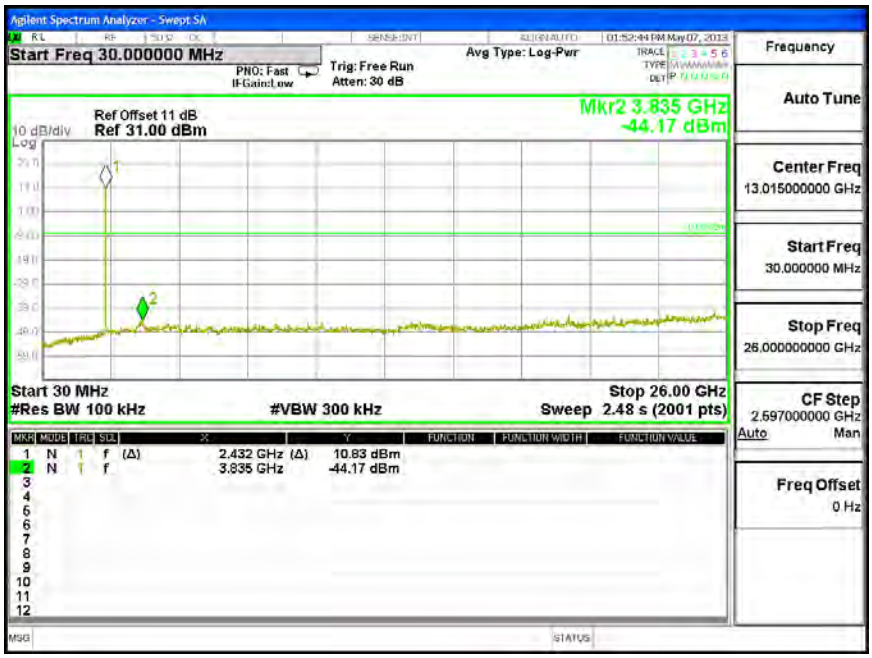


OUT-OF-BAND EMISSIONS

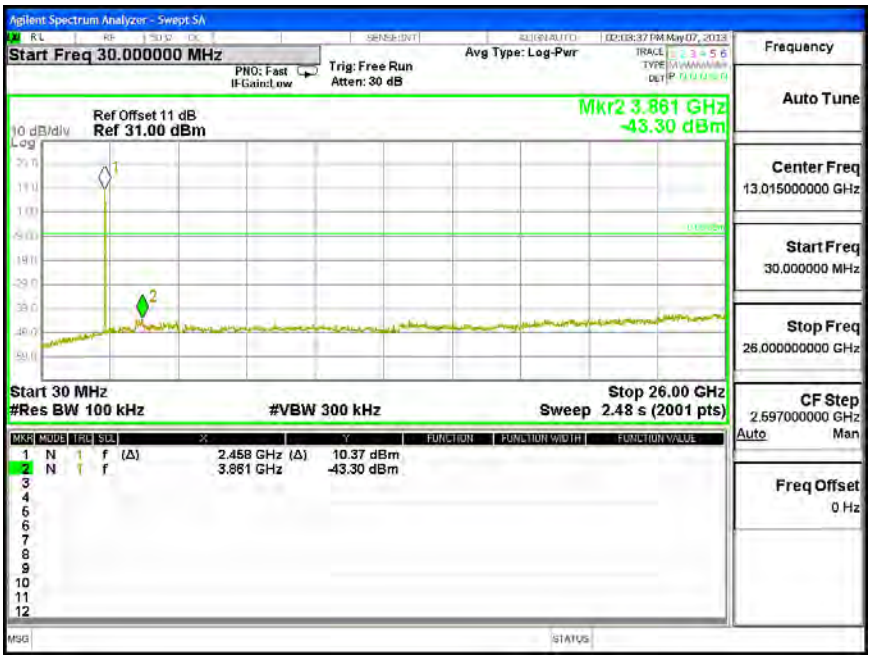
OUT OF BAND LOW CH



OUT OF BAND MID CH



OUT OF BAND HIGH CH

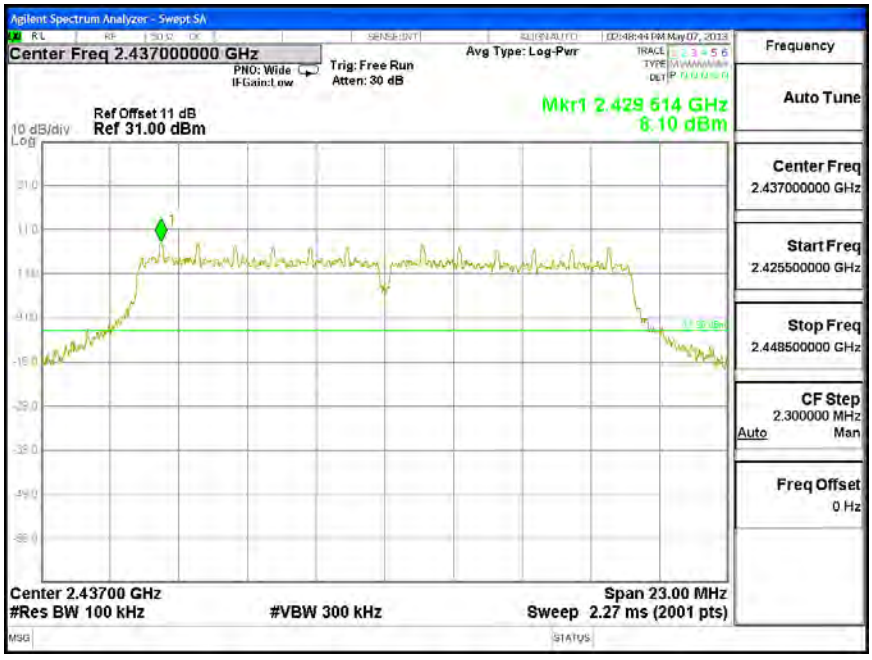


g mode

RESULTS

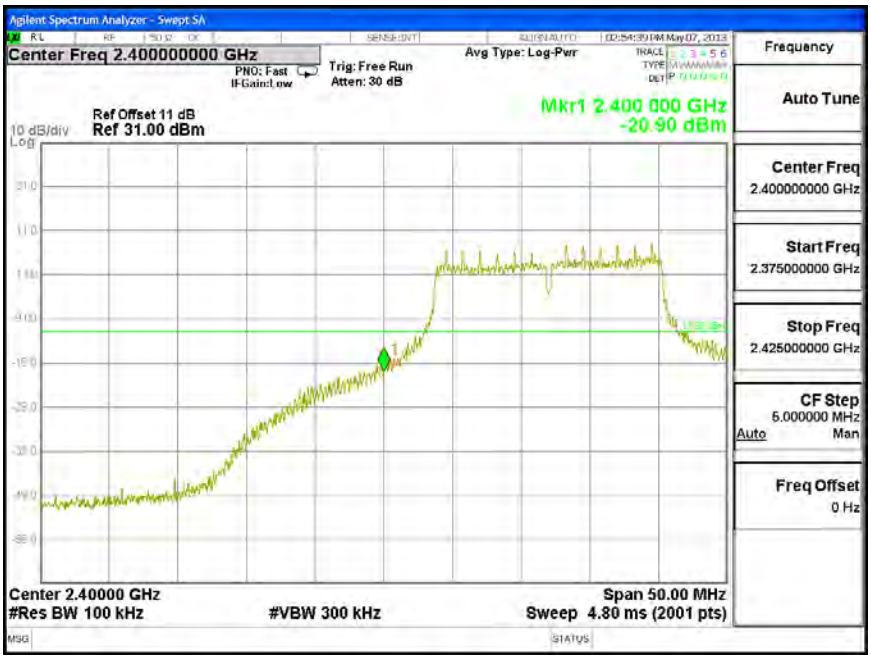
IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



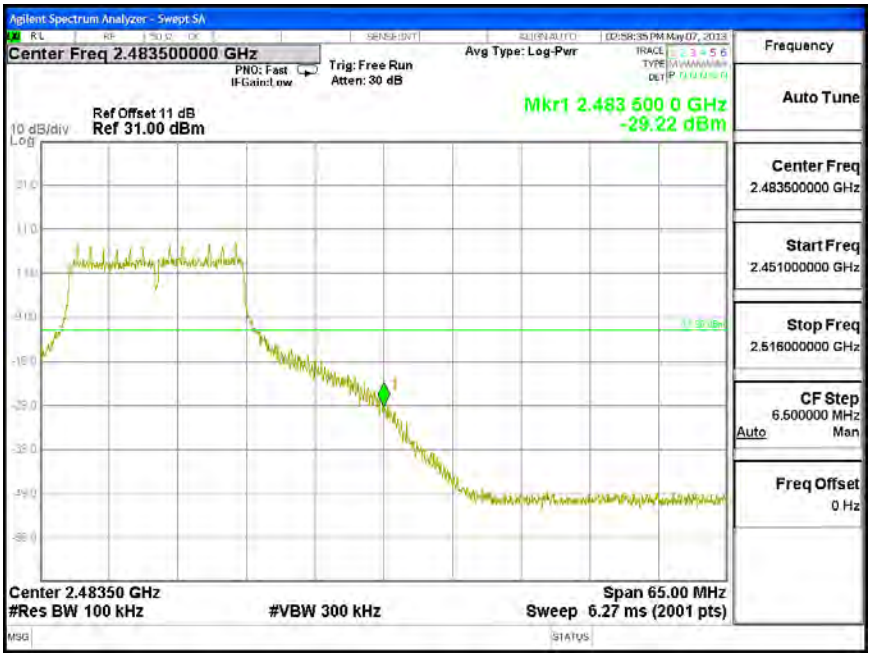
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



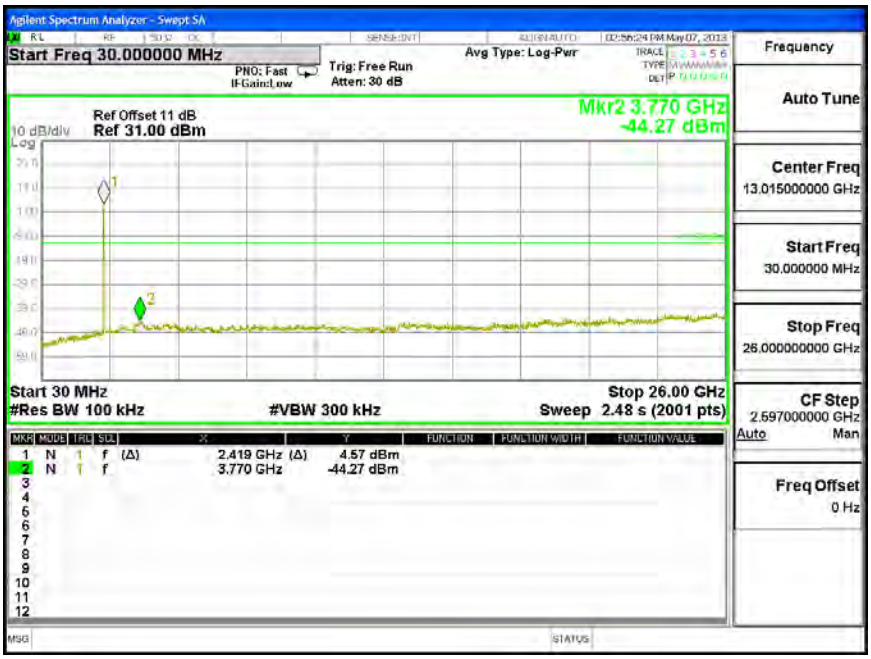
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH

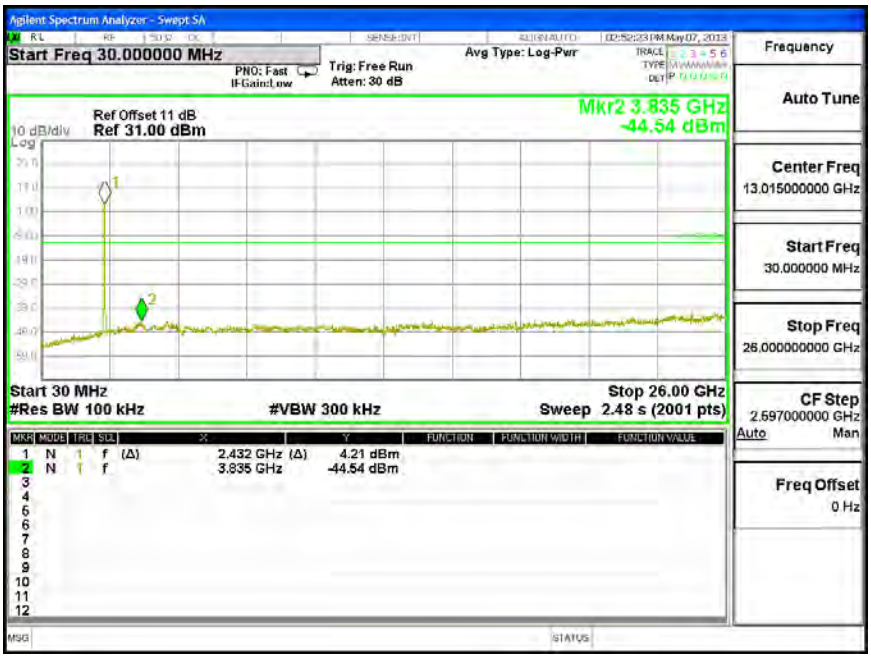


OUT-OF-BAND EMISSIONS

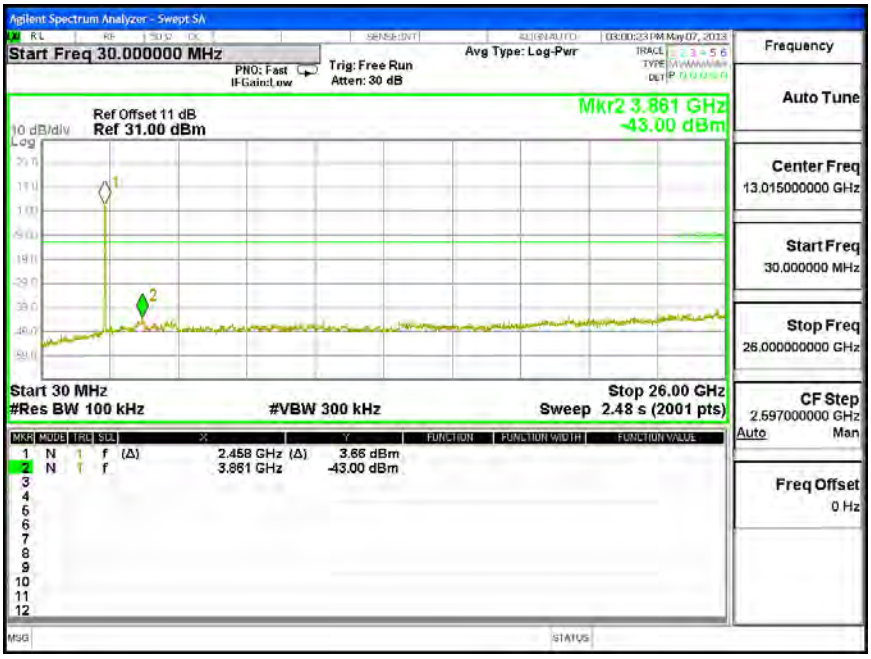
OUT OF BAND LOW CH



OUT OF BAND MID CH



OUT OF BAND HIGH CH

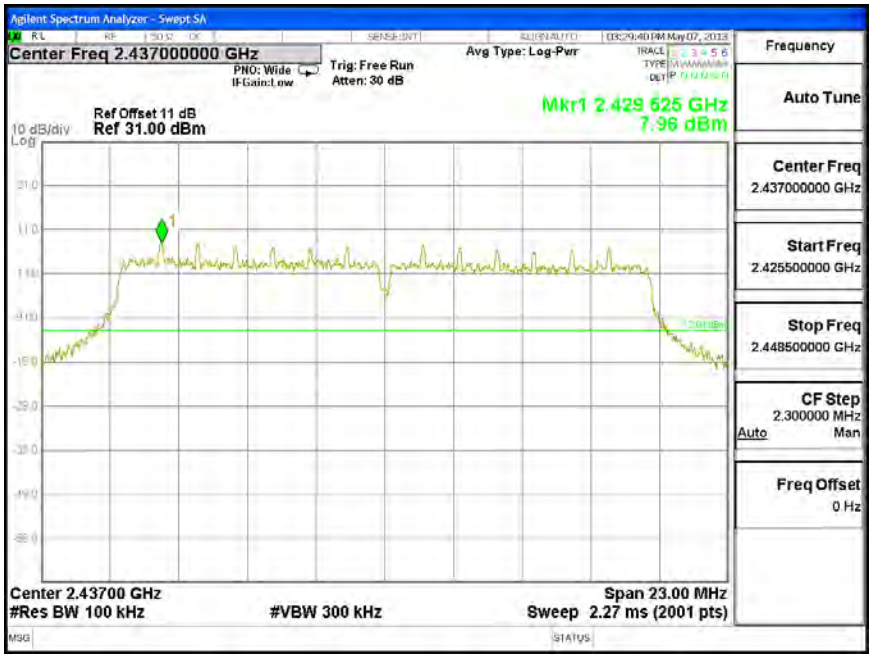


HT20

RESULTS

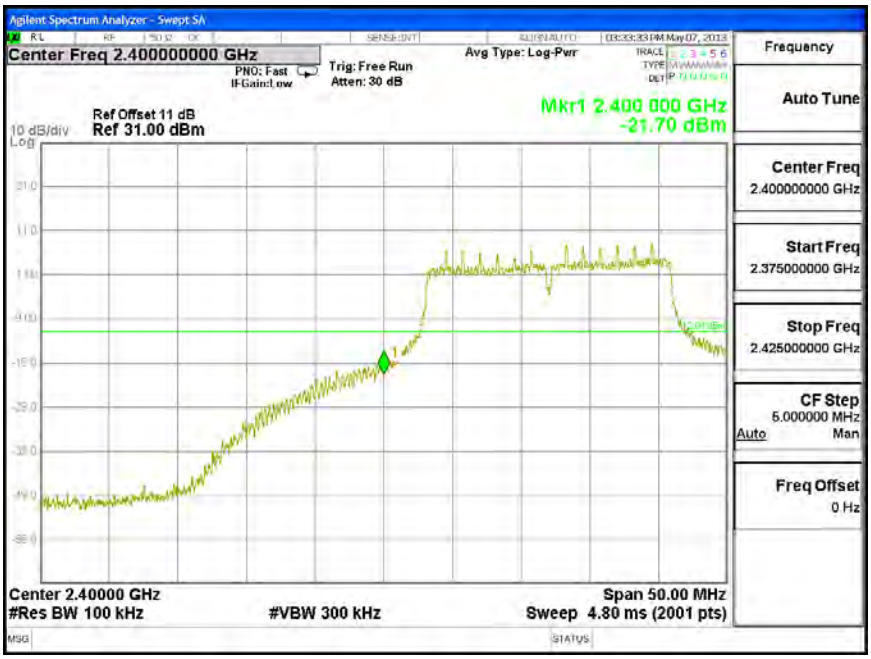
IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



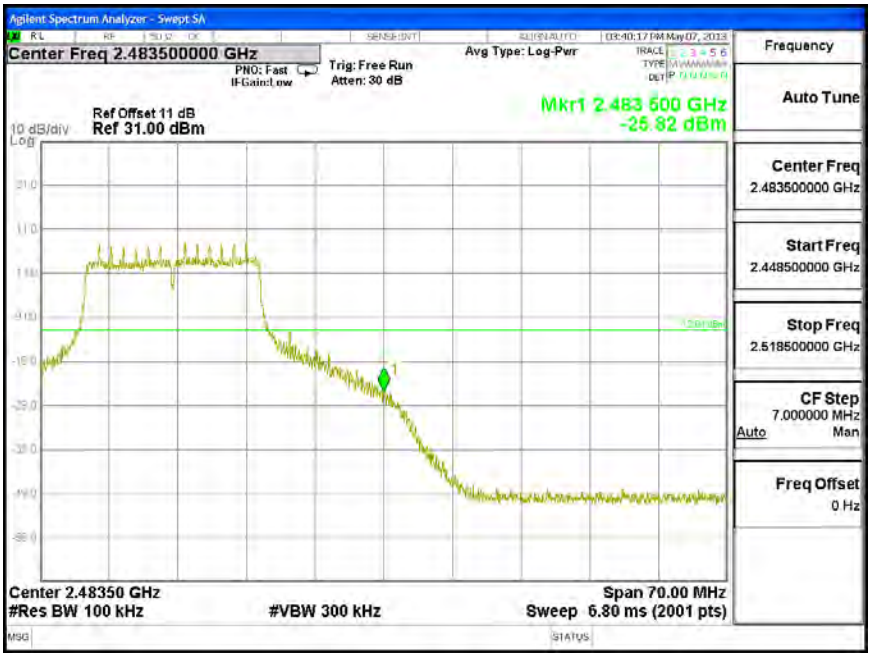
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



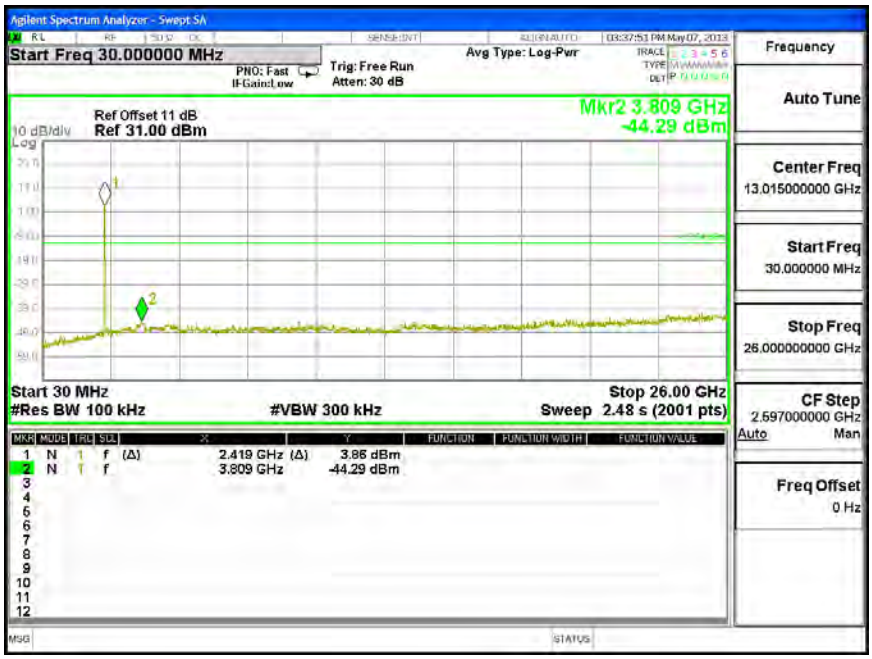
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH

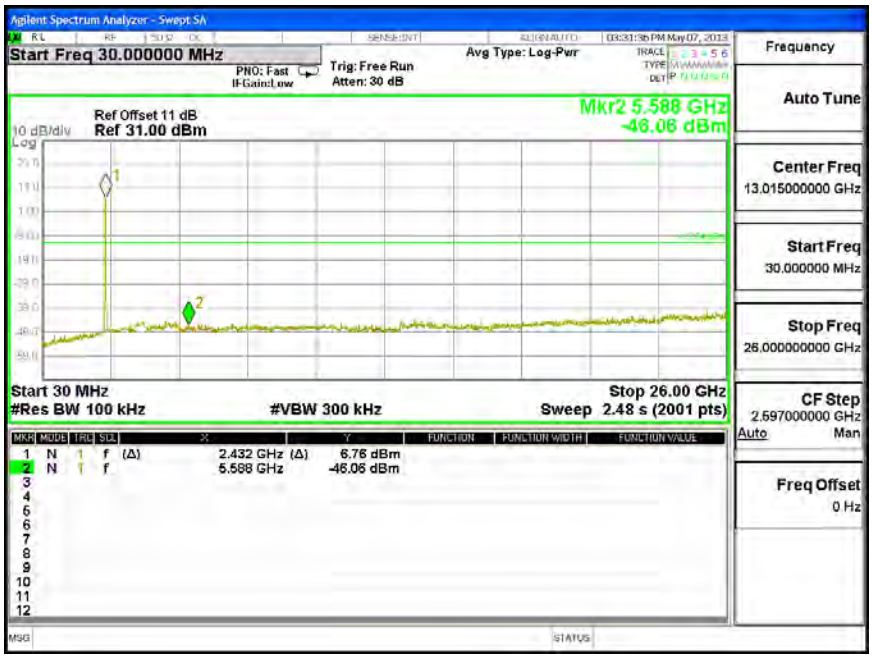


OUT-OF-BAND EMISSIONS

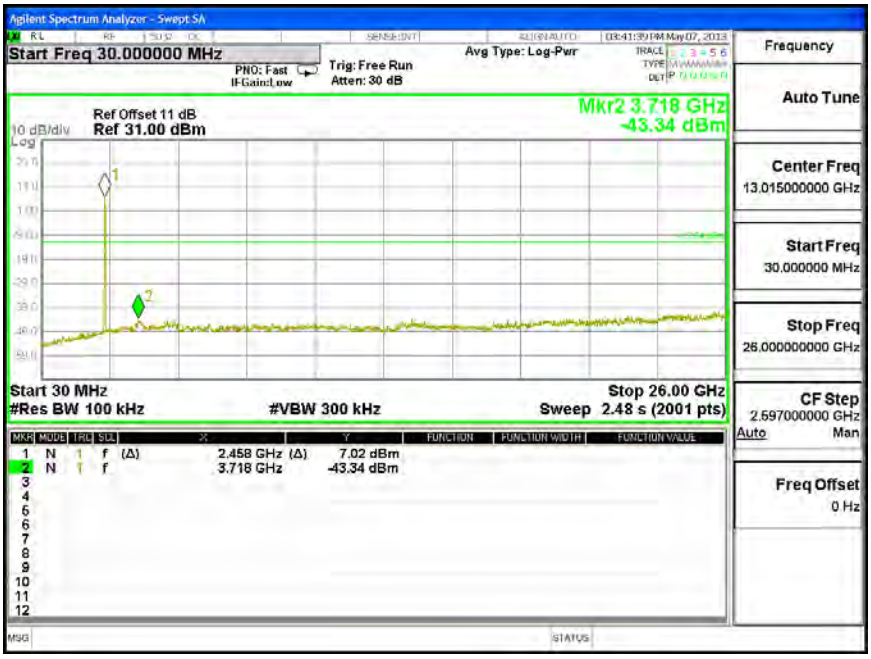
OUT OF BAND LOW CH



OUT OF BAND MID CH



OUT OF BAND HIGH CH



7.2. 5.8 GHz BAND

7.2.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

KDB 558074 D01 v01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247".

RESULTS

a mode

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	15.111	0.5
Mid	5785	15.111	0.5
High	5825	15.295	0.5

HT20

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	15.134	0.5
Mid	5785	15.123	0.5
High	5825	15.065	0.5

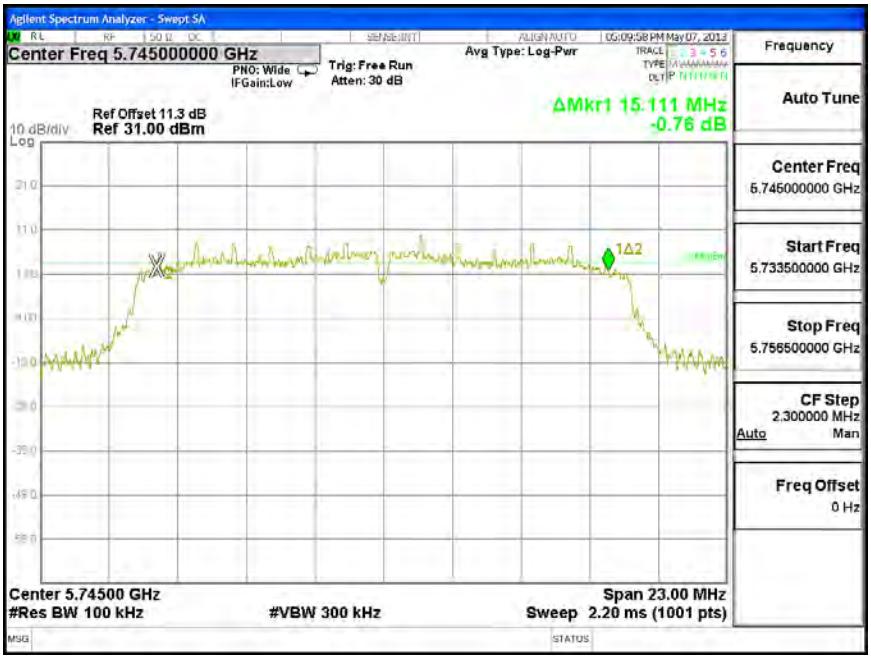
HT40

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5755	32.591	0.5
High	5795	35.144	0.5

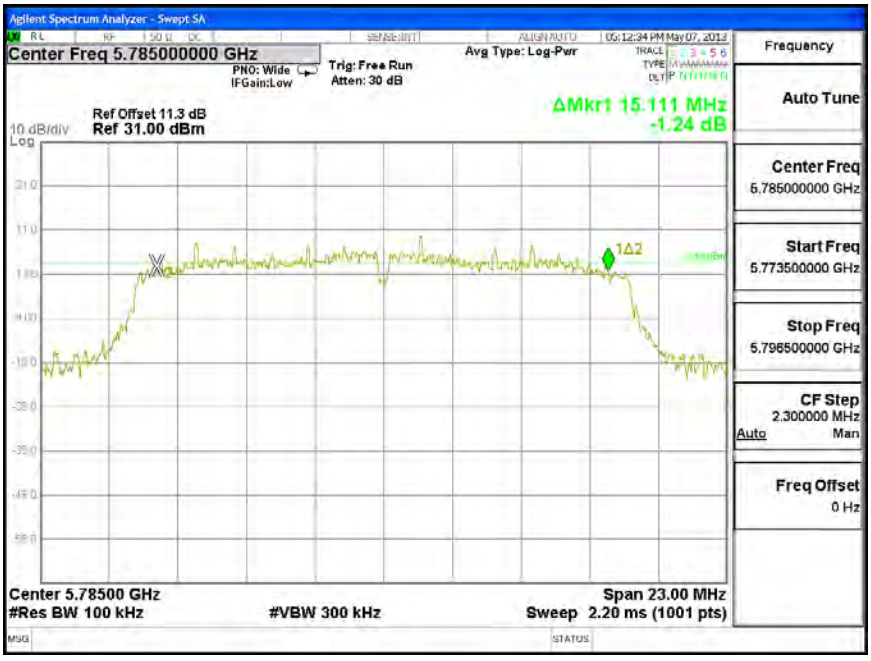
a mode

6 dB BANDWIDTH

6 dB BANDWIDTH LOW CH



6 dB BANDWIDTH MID CH

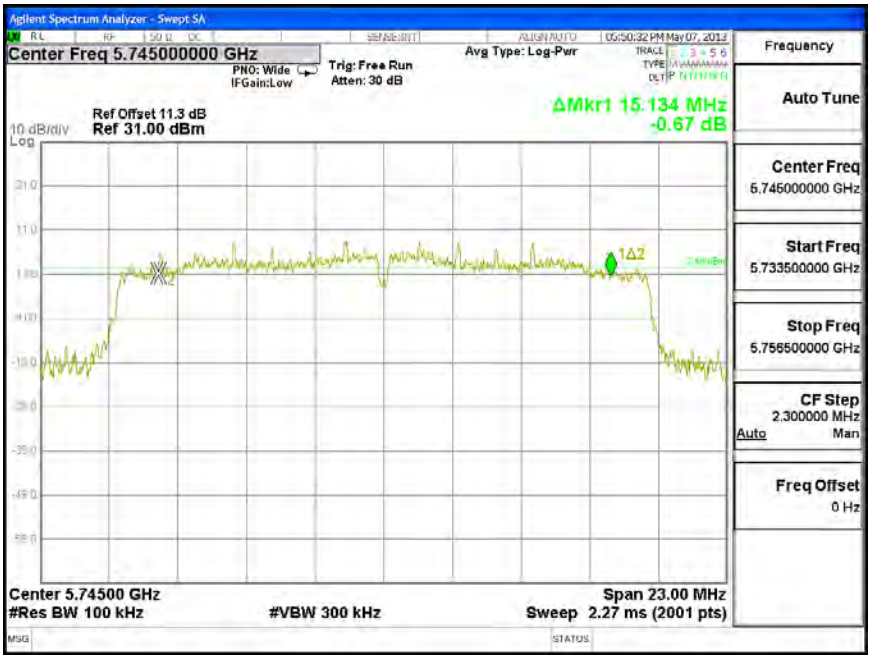


6 dB BANDWIDTH HIGH CH

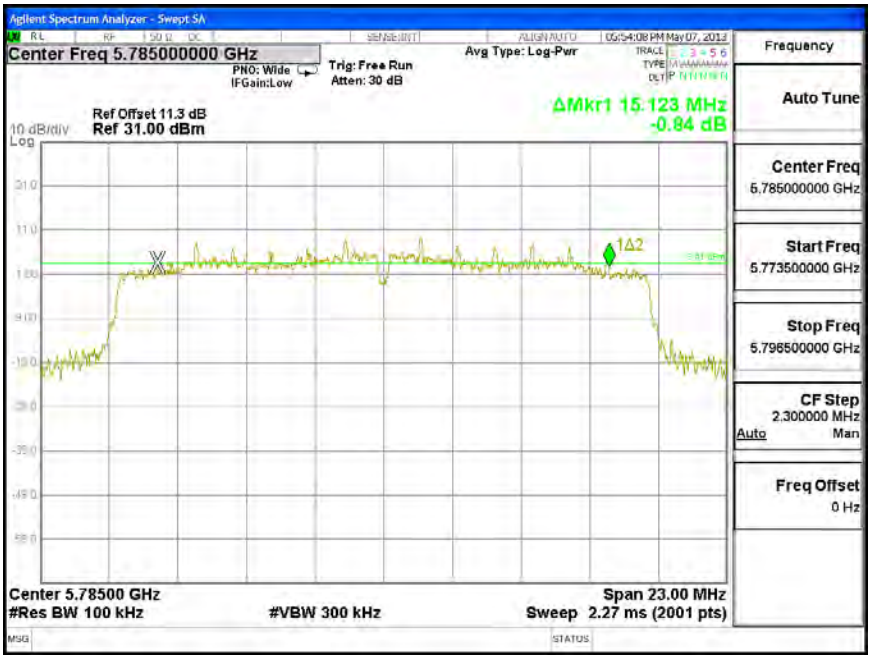
HT20

6 dB BANDWIDTH

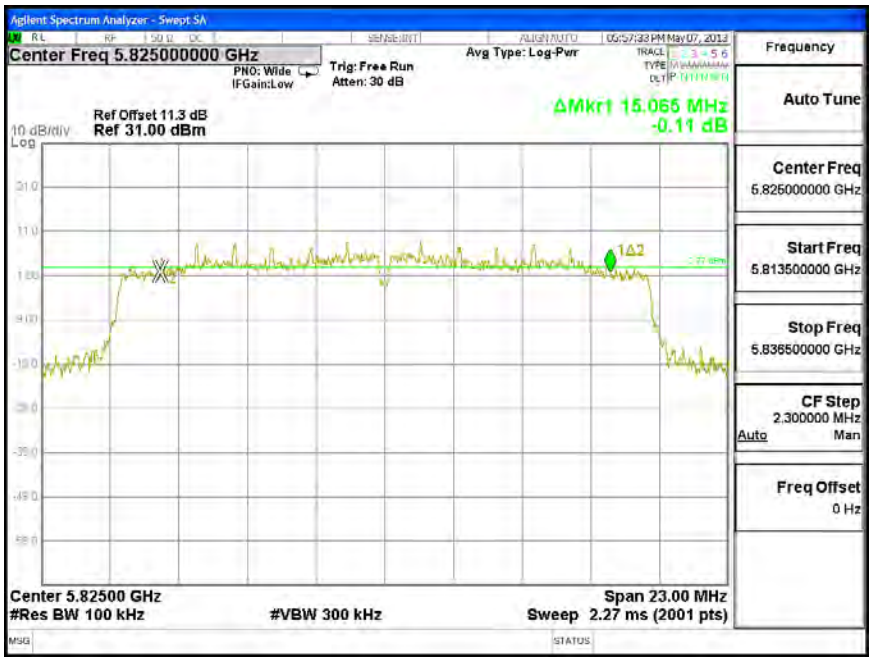
6 dB BANDWIDTH LOW CH



6 dB BANDWIDTH MID CH



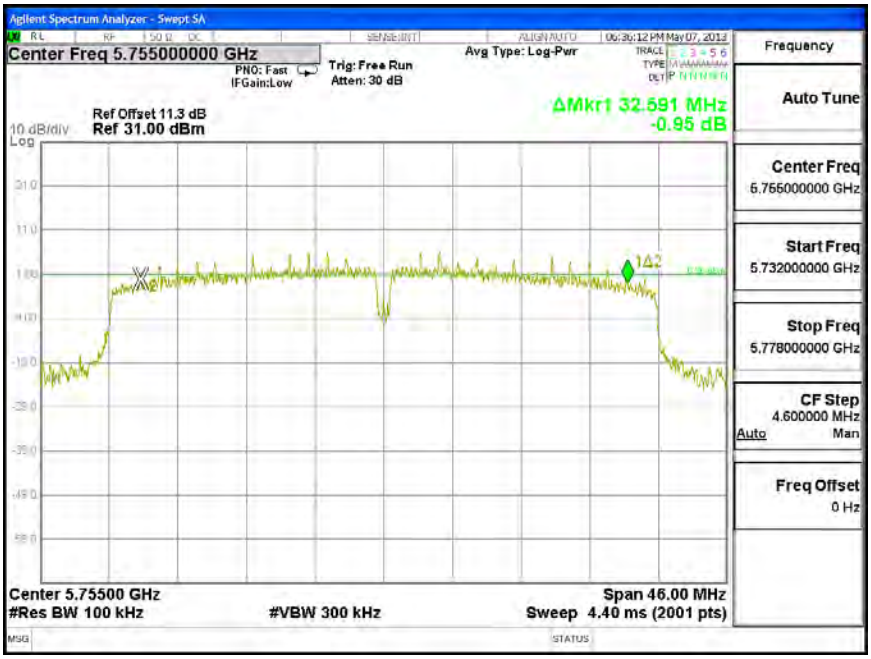
6 dB BANDWIDTH HIGH CH



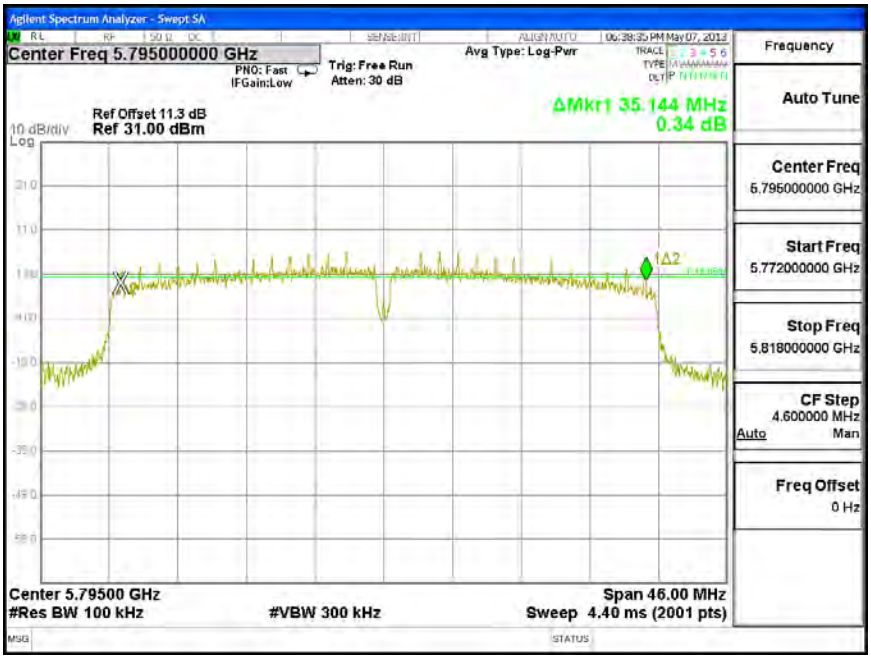
HT40

6 dB BANDWIDTH

6 dB BANDWIDTH LOW CH



6 dB BANDWIDTH HIGH CH



7.2.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

a mode

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	16.4530
Mid	5785	16.4300
High	5825	16.4160

HT20

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	17.6150
Mid	5785	17.5220
High	5825	17.6670

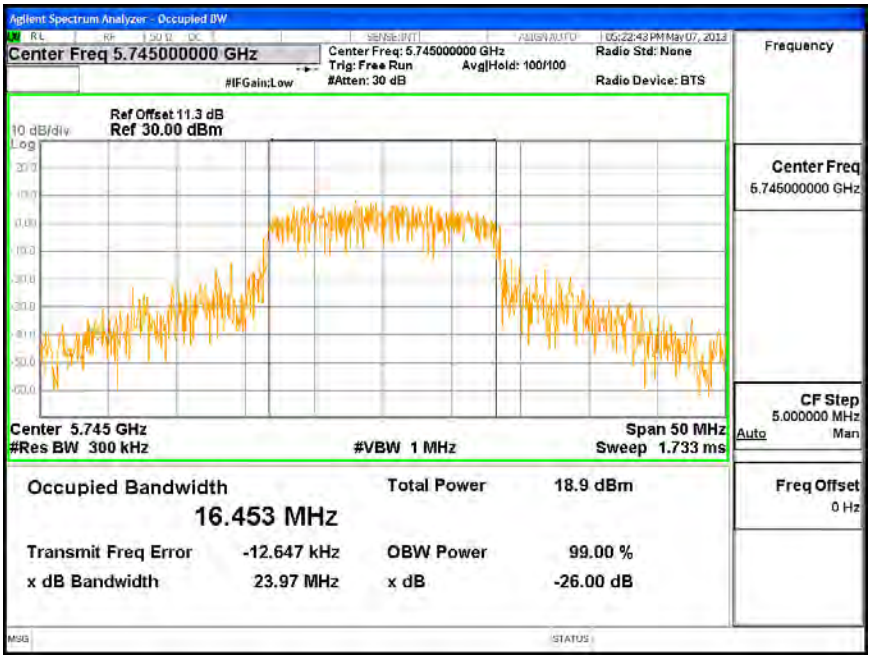
HT40

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5755	35.8960
High	5795	35.2580

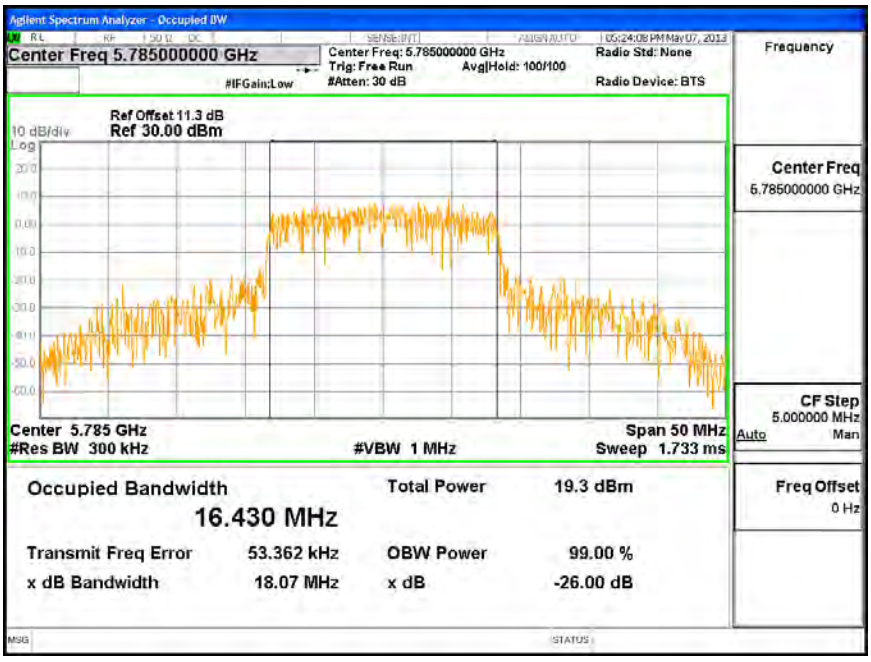
a mode

99% BANDWIDTH

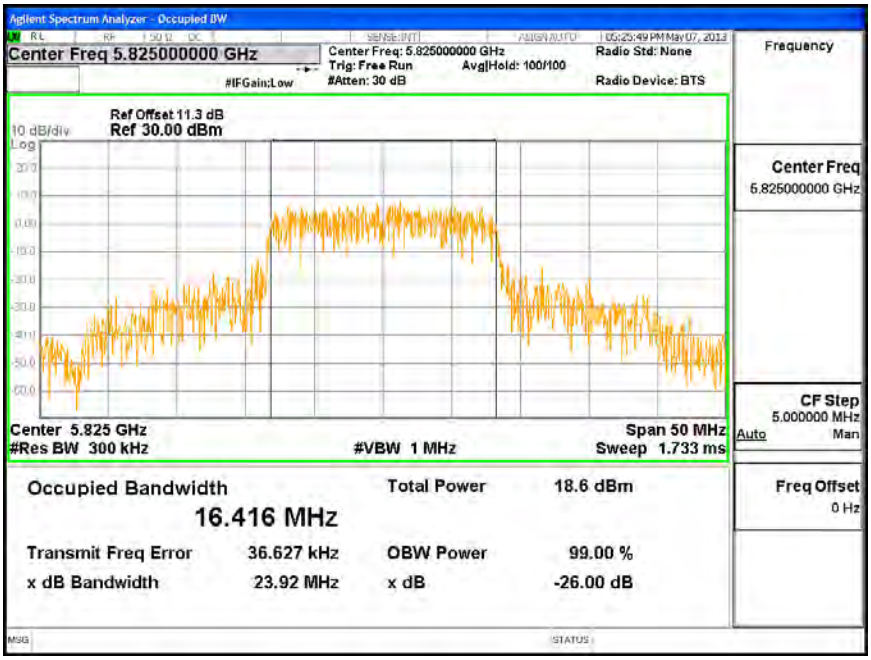
99% BANDWIDTH LOW CH



99% BANDWIDTH MID CH



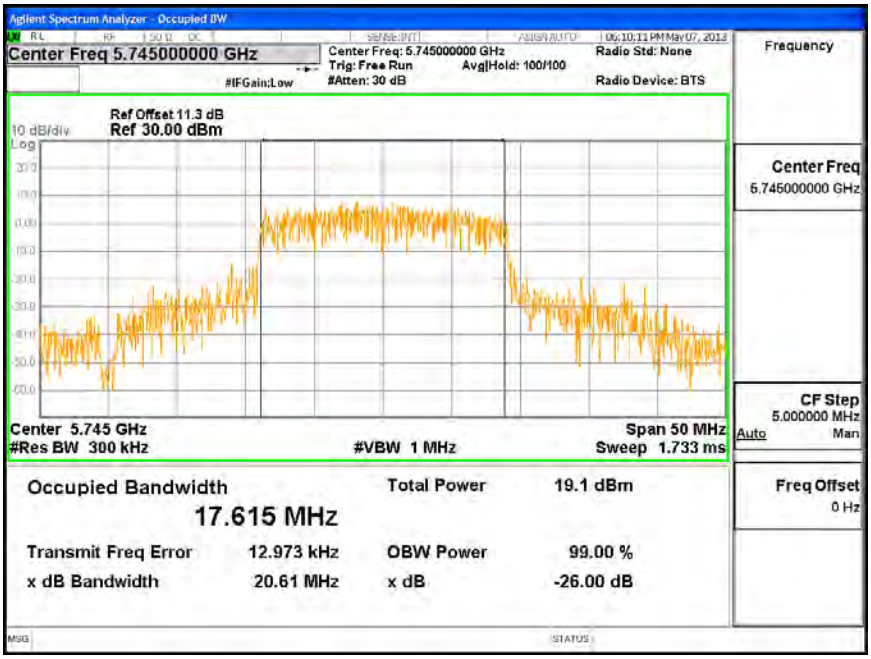
99% BANDWIDTH HIGH CH



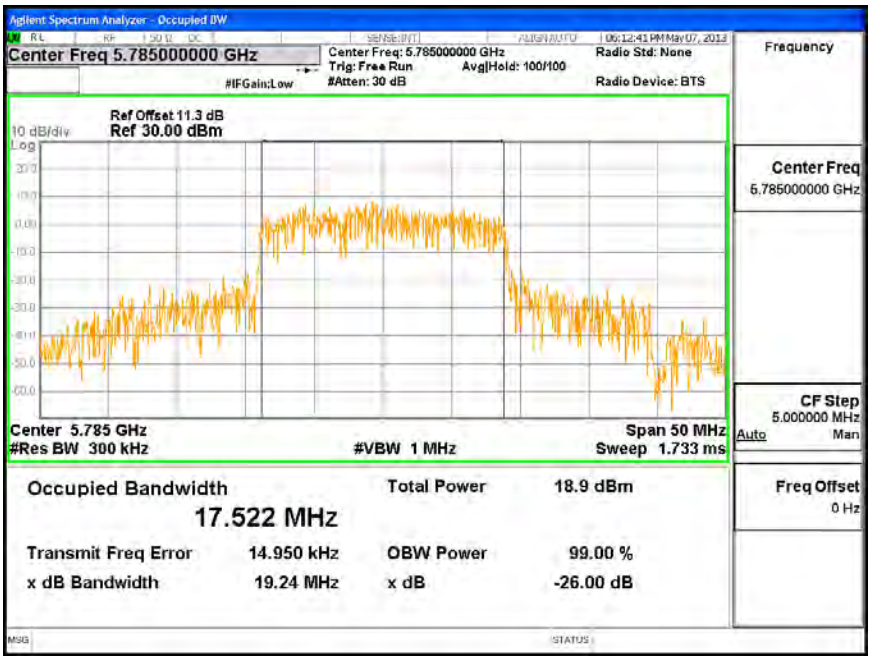
HT20

99% BANDWIDTH

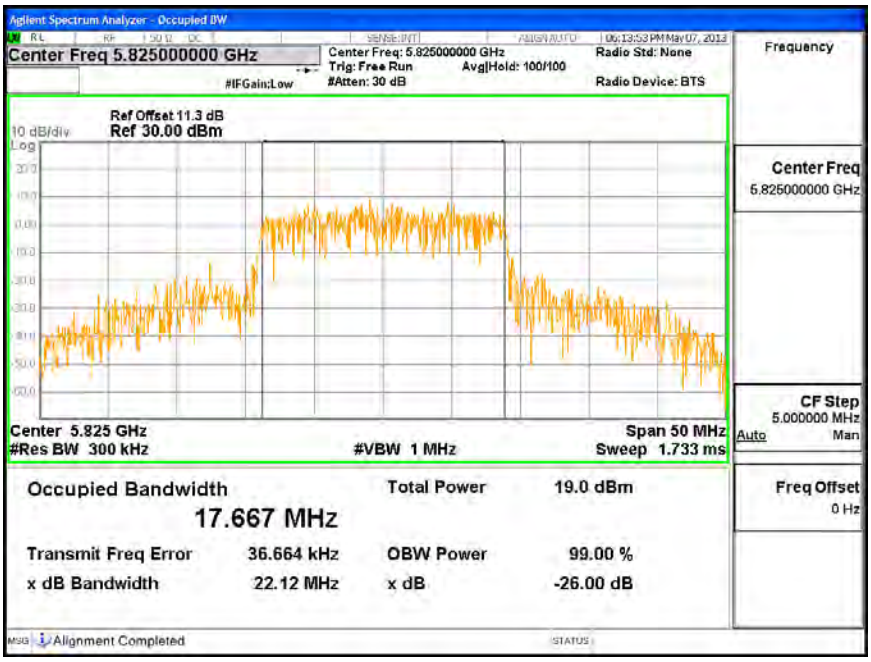
99% BANDWIDTH LOW CH



99% BANDWIDTH MID CH



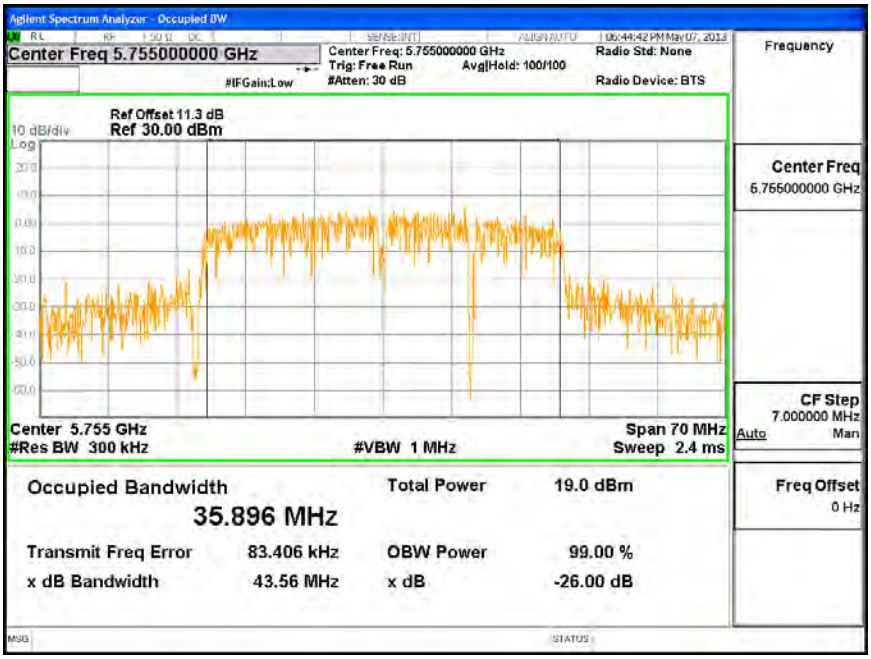
99% BANDWIDTH HIGH CH



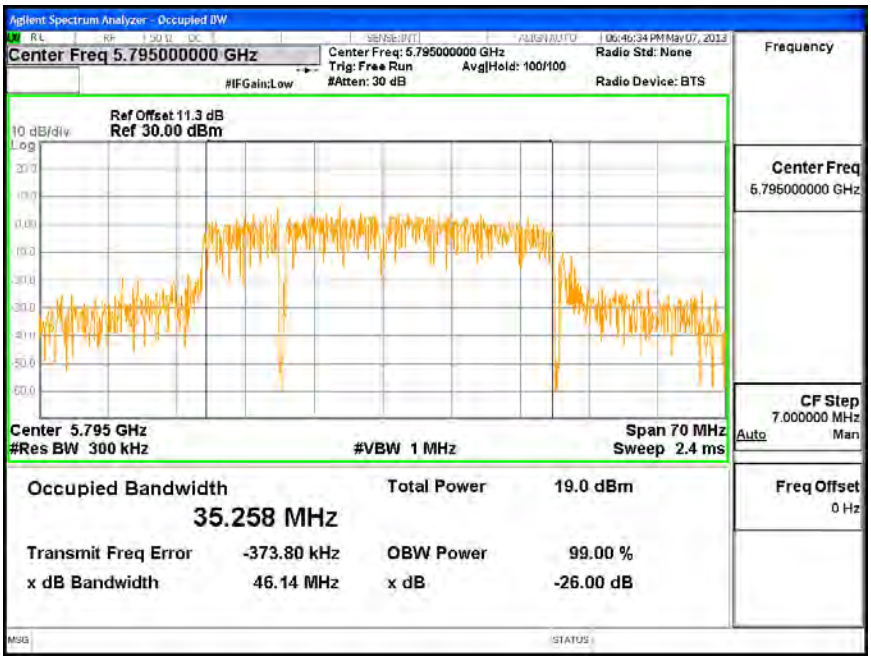
HT40

99% BANDWIDTH

99% BANDWIDTH LOW CH



99% BANDWIDTH HIGH CH



7.2.3. AVERAGE POWER

LIMITS

Note; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.3 dB (including 10 dB pad and 1.3 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

a mode

Channel	Frequency (MHz)	Power (dBm)
Low	5745	14.62
Mid	5785	14.60
High	5825	14.47

HT20

Channel	Frequency (MHz)	Power (dBm)
Low	5745	14.59
Mid	5785	14.46
High	5825	14.56

HT40

Channel	Frequency (MHz)	Power (dBm)
Low	5755	14.55
High	5795	14.58

7.2.4. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-210 A8.4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

a mode

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	5745	-4.50	30.00	30	36	30.00
Mid	5785	-4.50	30.00	30	36	30.00
High	5825	-4.50	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	5745	22.192	22.19	30.00	-7.81
Mid	5785	22.051	22.05	30.00	-7.95
High	5825	21.811	21.81	30.00	-8.19

HT20

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	5745	-4.50	30.00	30	36	30.00
Mid	5785	-4.50	30.00	30	36	30.00
High	5825	-4.50	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	5745	21.580	21.58	30.00	-8.42
Mid	5785	21.540	21.54	30.00	-8.46
High	5825	21.593	21.59	30.00	-8.41

HT40

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	5755	-4.50	30.00	30	36	30.00
High	5795	-5.40	30.00	30	36	30.00

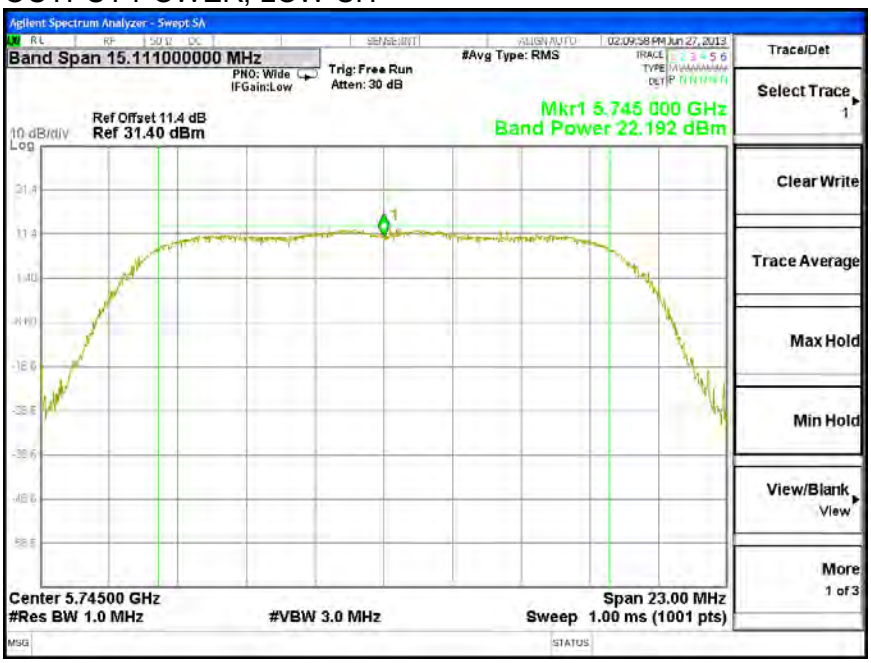
Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	5755	21.730	21.73	30.00	-8.27
High	5795	21.945	21.95	30.00	-8.05

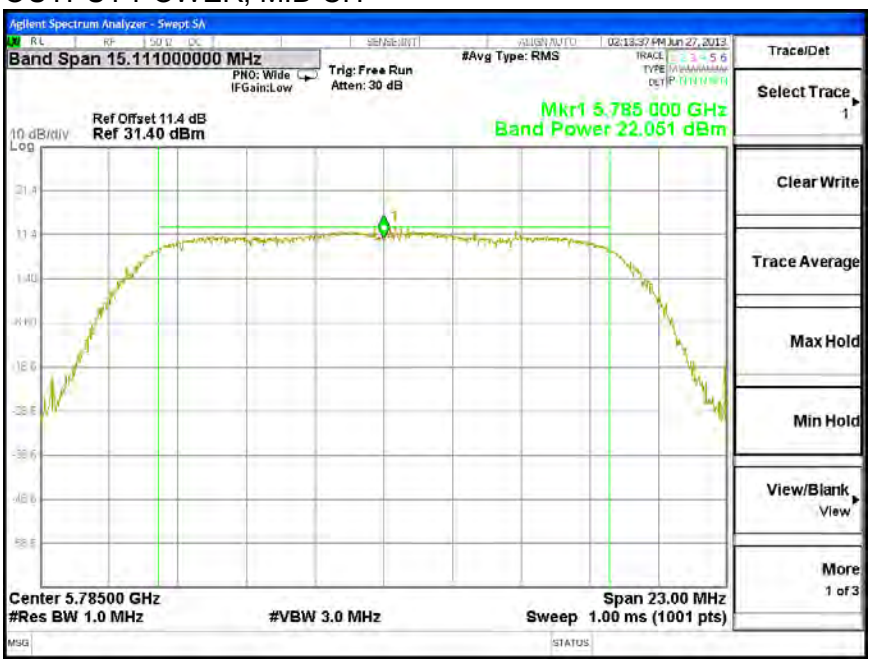
a mode

OUTPUT POWER

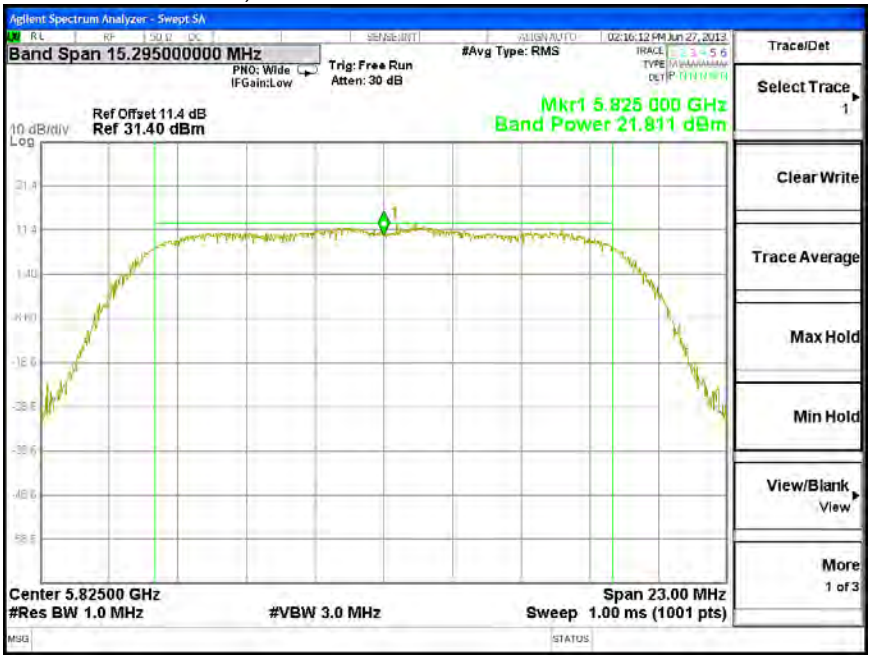
OUTPUT POWER, LOW CH



OUTPUT POWER, MID CH



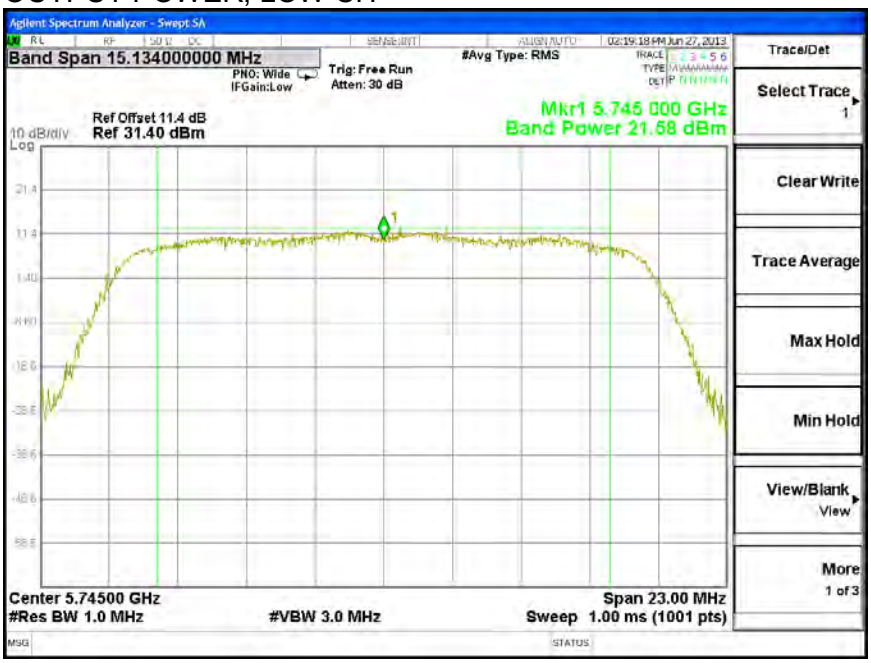
OUTPUT POWER, HIGH CH



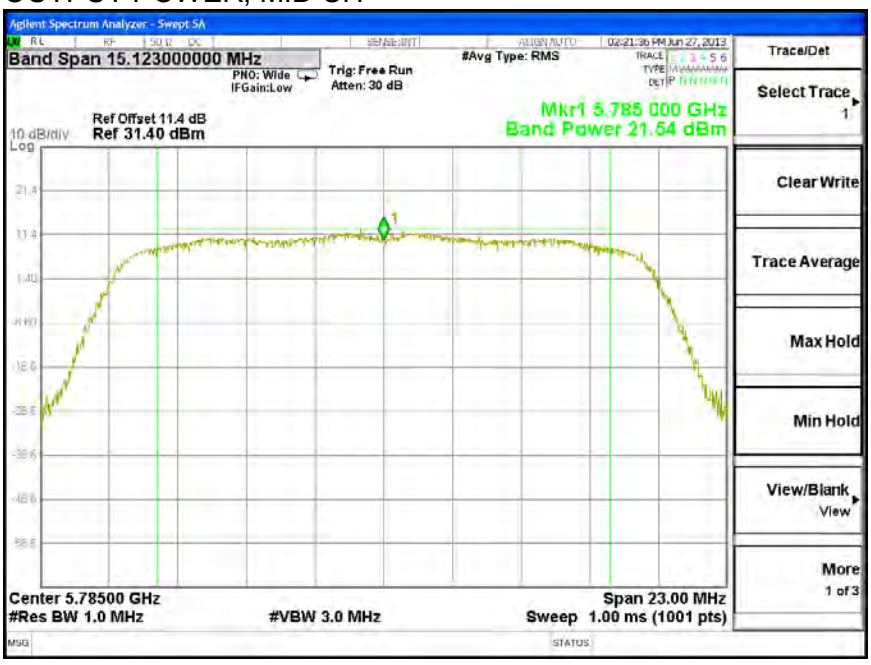
HT20

OUTPUT POWER

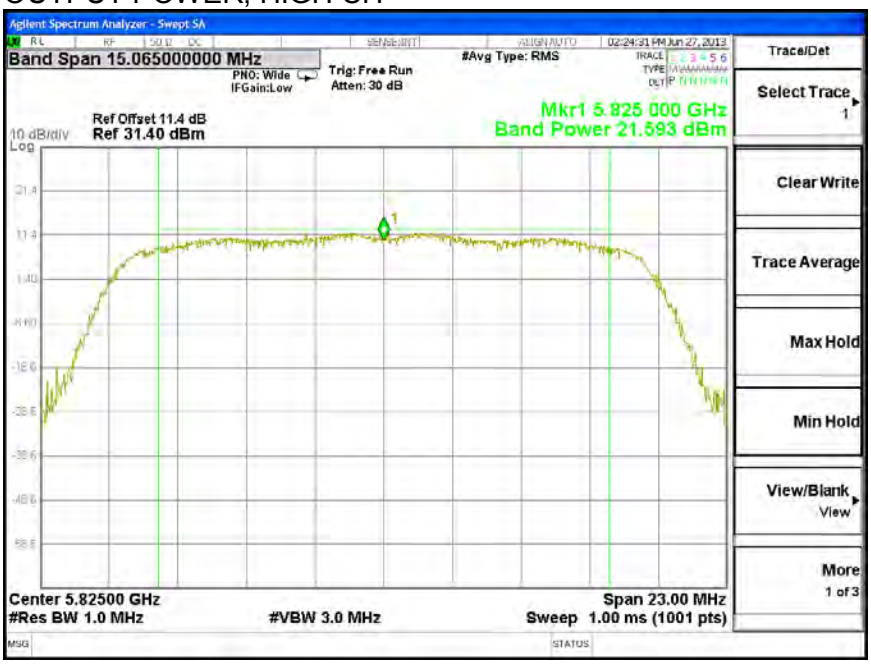
OUTPUT POWER, LOW CH



OUTPUT POWER, MID CH



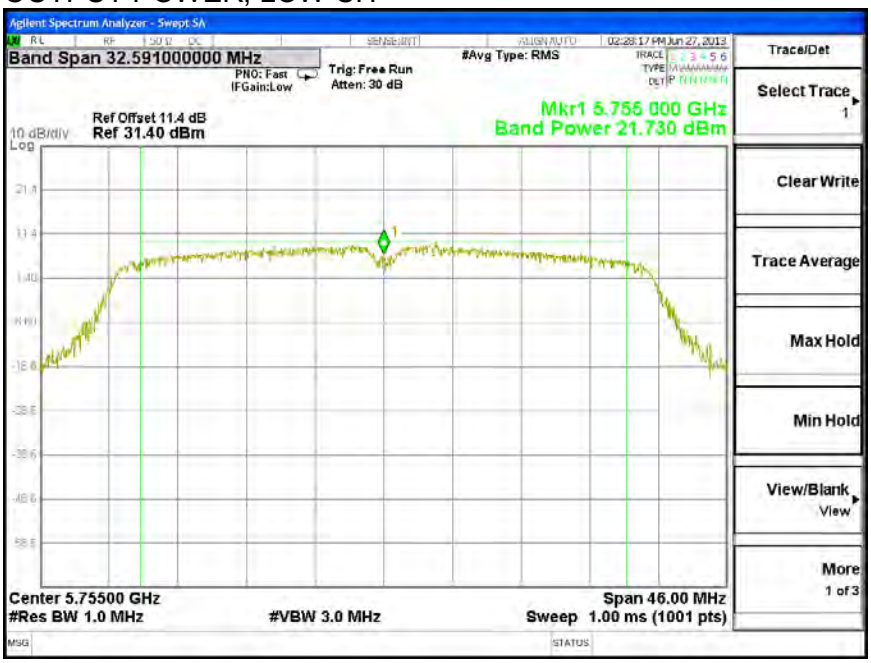
OUTPUT POWER, HIGH CH



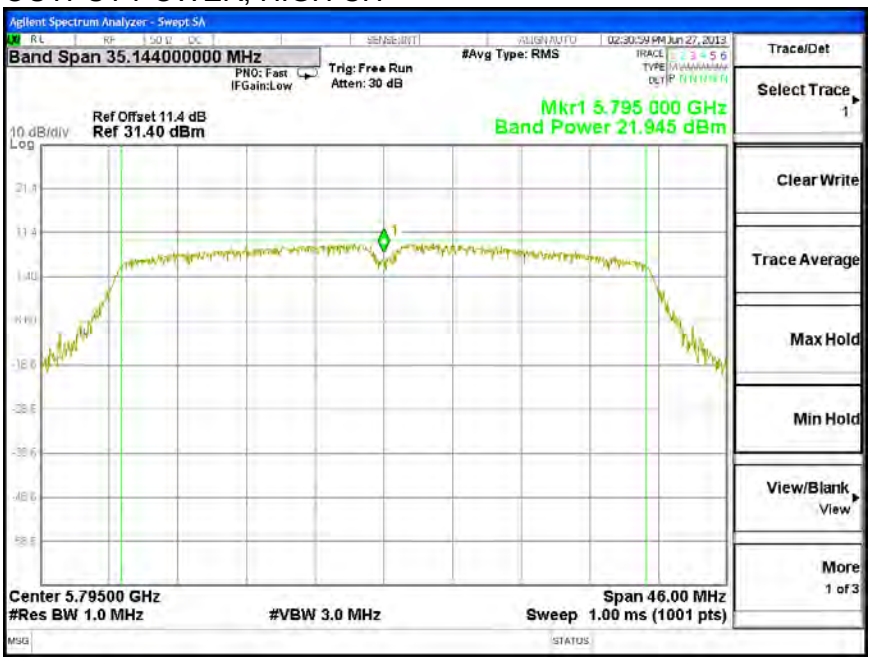
HT40

OUTPUT POWER

OUTPUT POWER, LOW CH



OUTPUT POWER, HIGH CH



7.2.5. PSD

LIMITS

FCC §15.247

IC RSS-210 A8.2

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

a mode

PSD Results

Channel	Frequency (MHz)	Meas (dBm)	Limit (dBm)	Margin (dB)
Low	5745	-5.60	8.0	-13.60
Mid	5785	-6.16	8.0	-14.16
High	5825	-5.32	8.0	-13.32

HT20

PSD Results

Channel	Frequency (MHz)	Meas (dBm)	Limit (dBm)	Margin (dB)
Low	5745	-5.50	8.0	-13.50
Mid	5785	-5.67	8.0	-13.67
High	5825	-5.38	8.0	-13.38

HT40

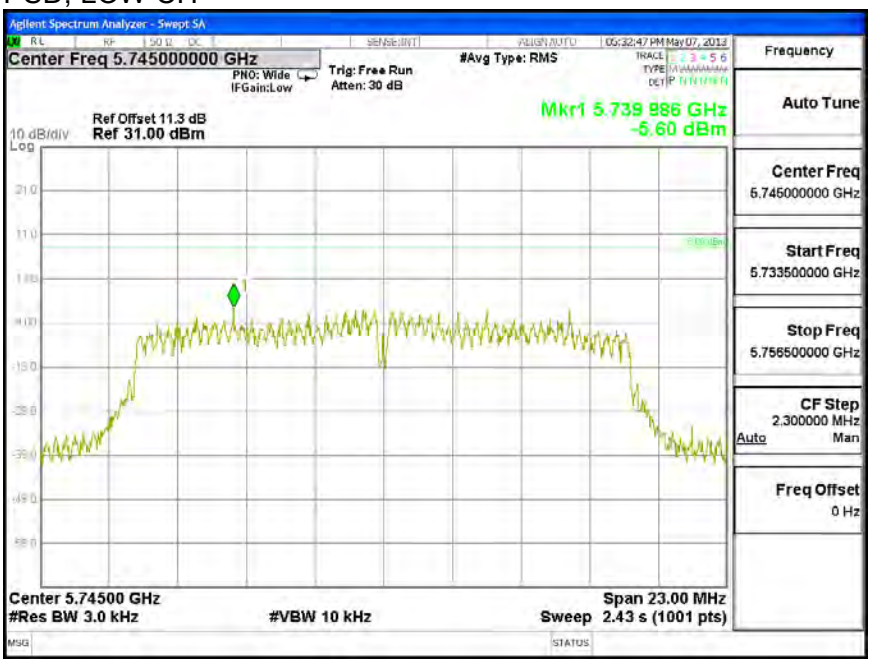
PSD Results

Channel	Frequency (MHz)	Meas (dBm)	Limit (dBm)	Margin (dB)
Low	5755	-9.50	8.0	-17.50
High	5795	-8.61	8.0	-16.61

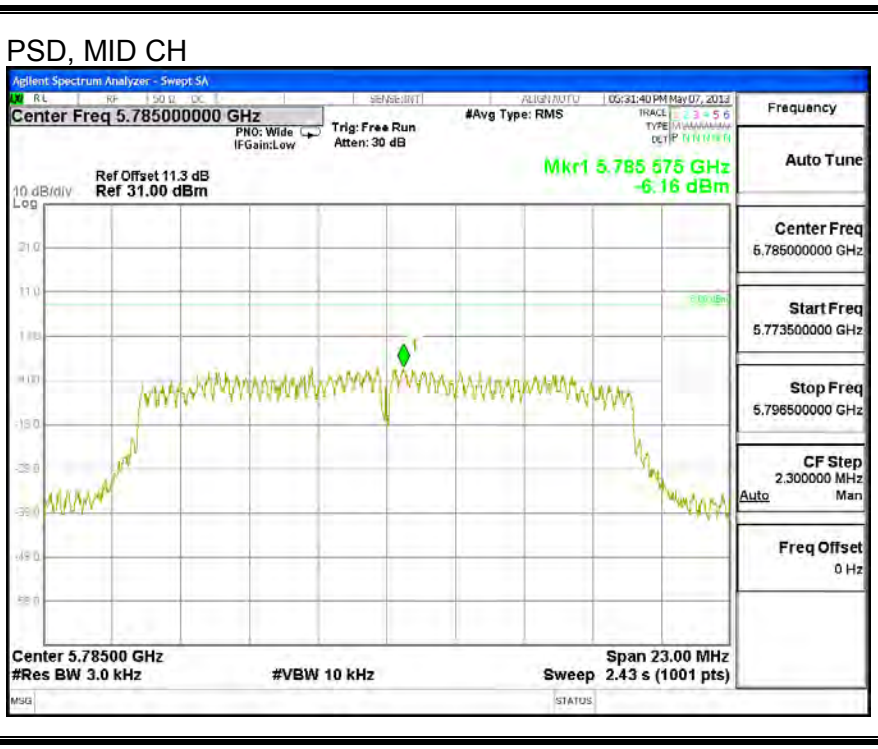
a mode

PSD

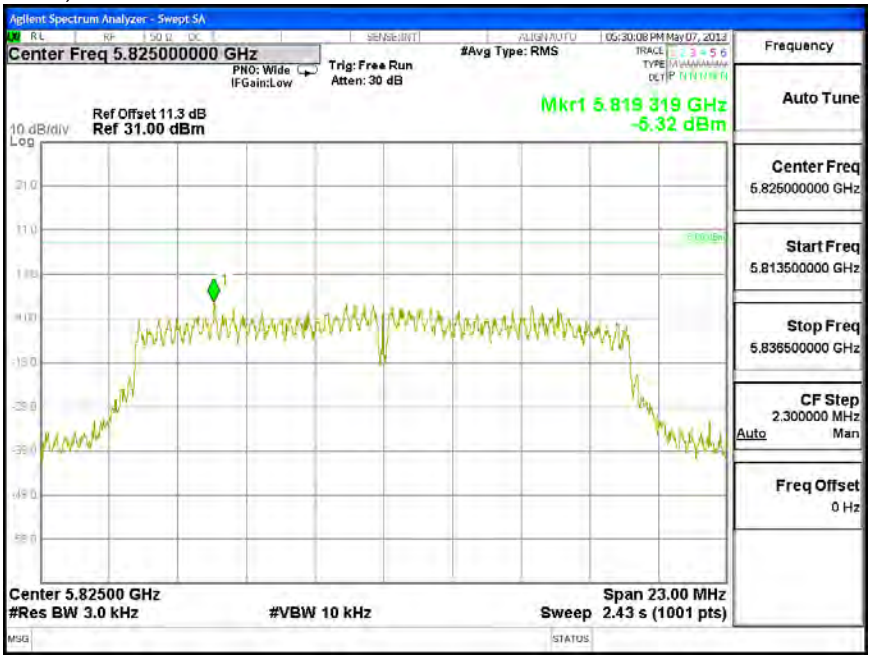
PSD, LOW CH



PSD, MID CH



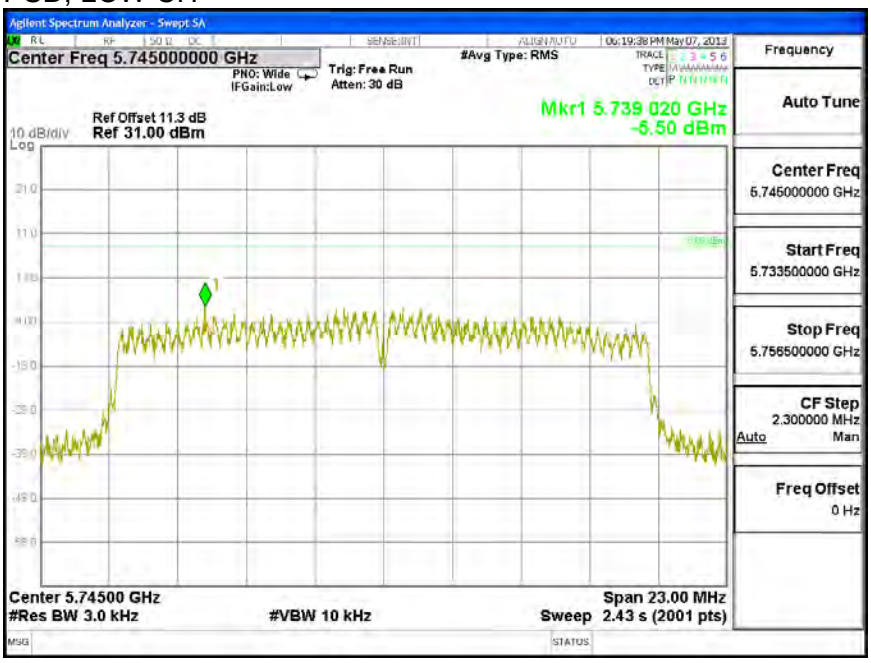
PSD, HIGH CH



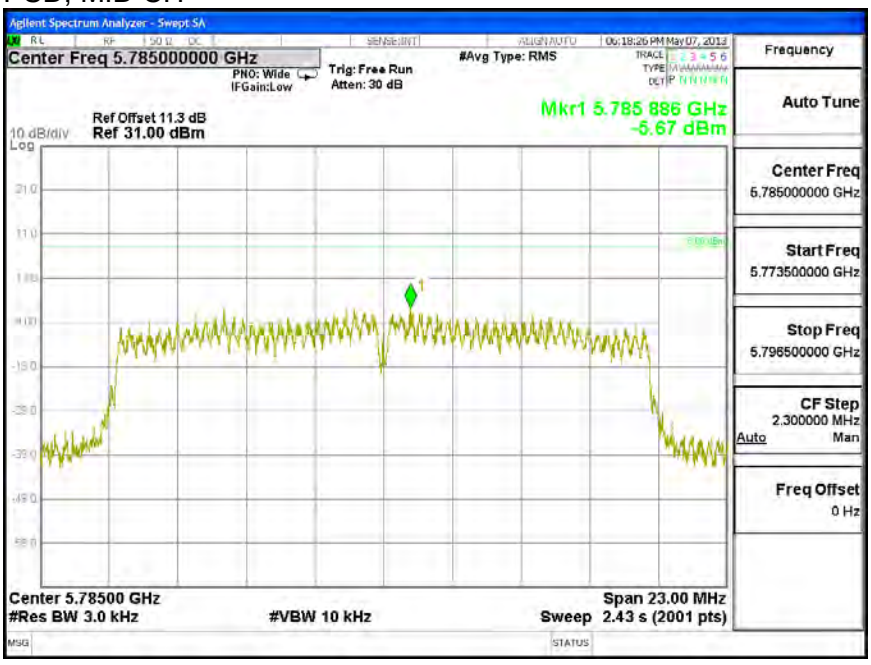
HT20

PSD

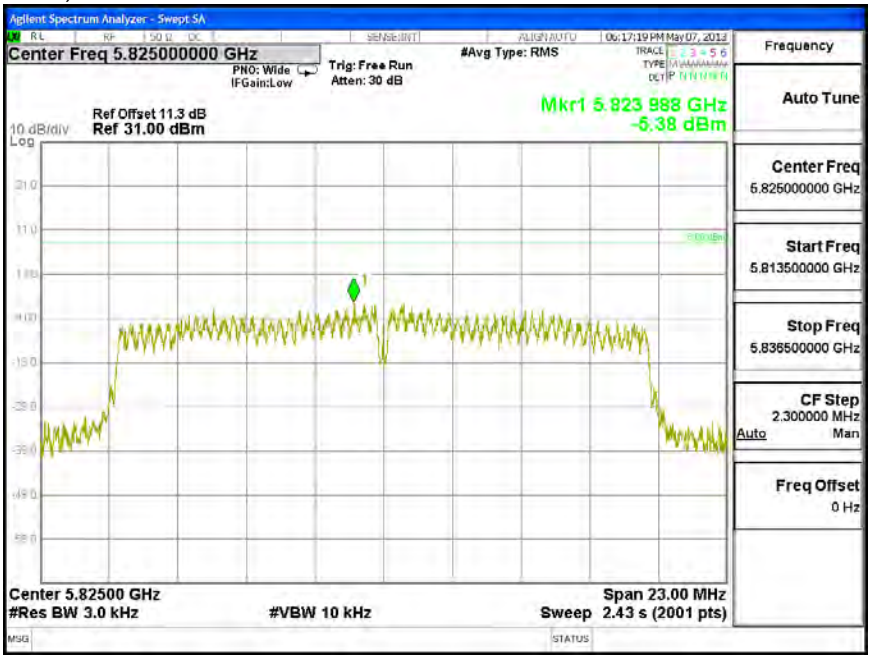
PSD, LOW CH



PSD, MID CH



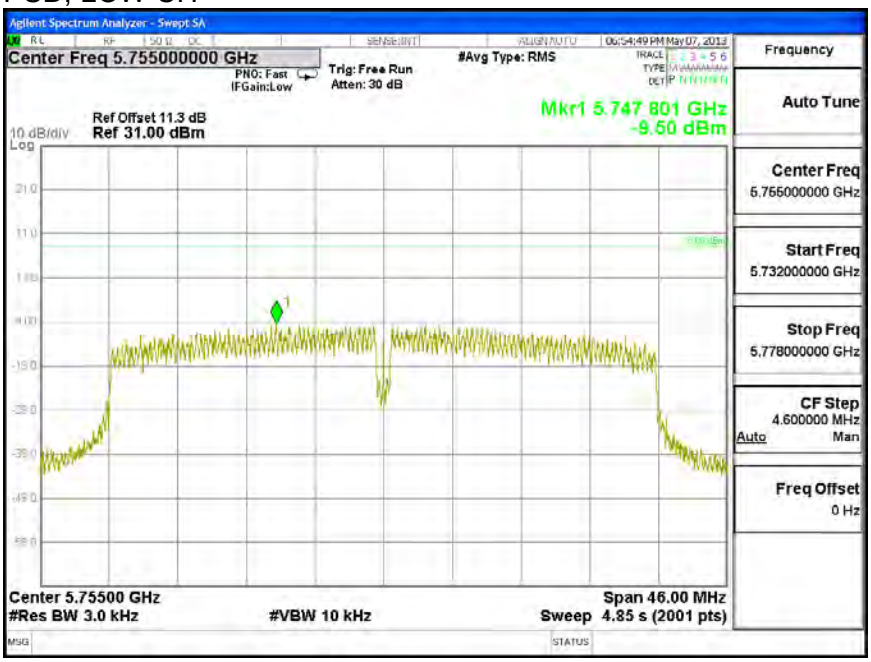
PSD, HIGH CH



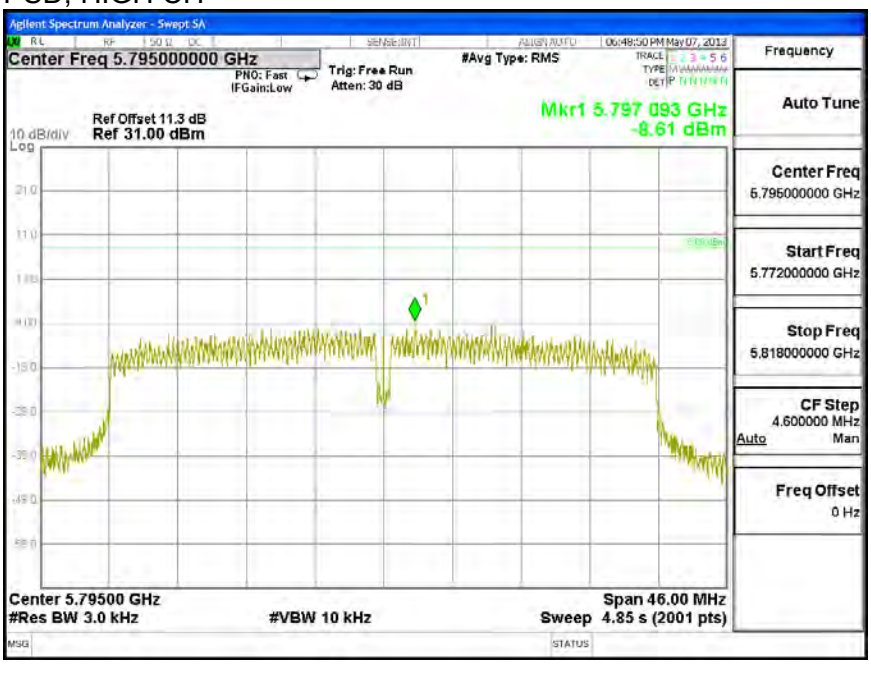
HT40

PSD

PSD, LOW CH



PSD, HIGH CH



7.2.6. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

TEST PROCEDURE

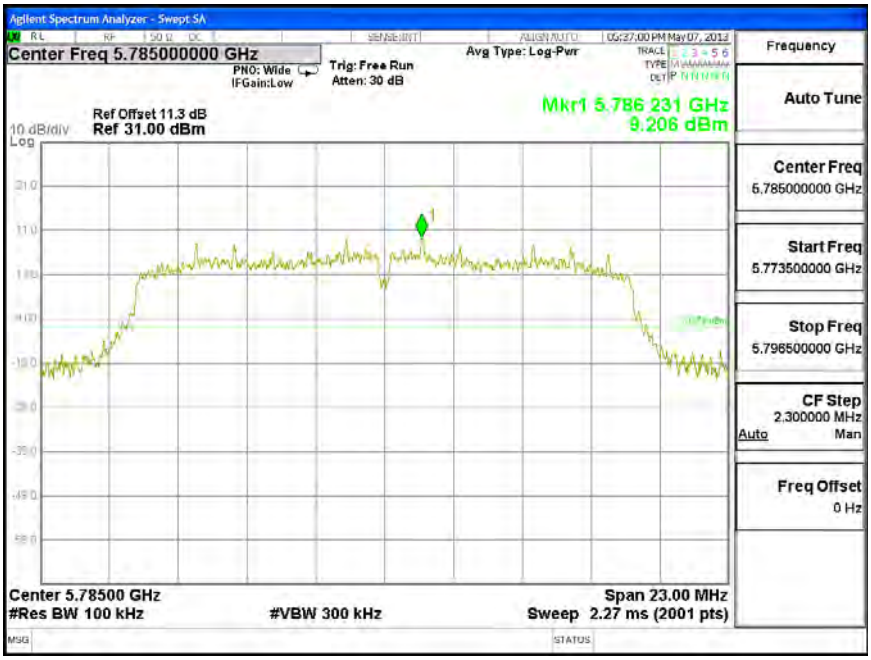
The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

a mode

RESULTS

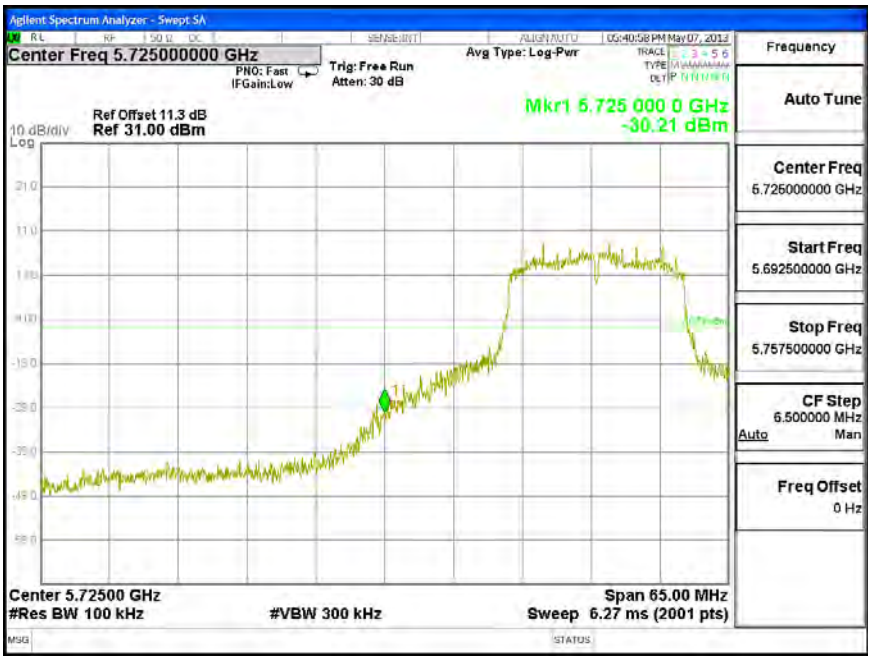
IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



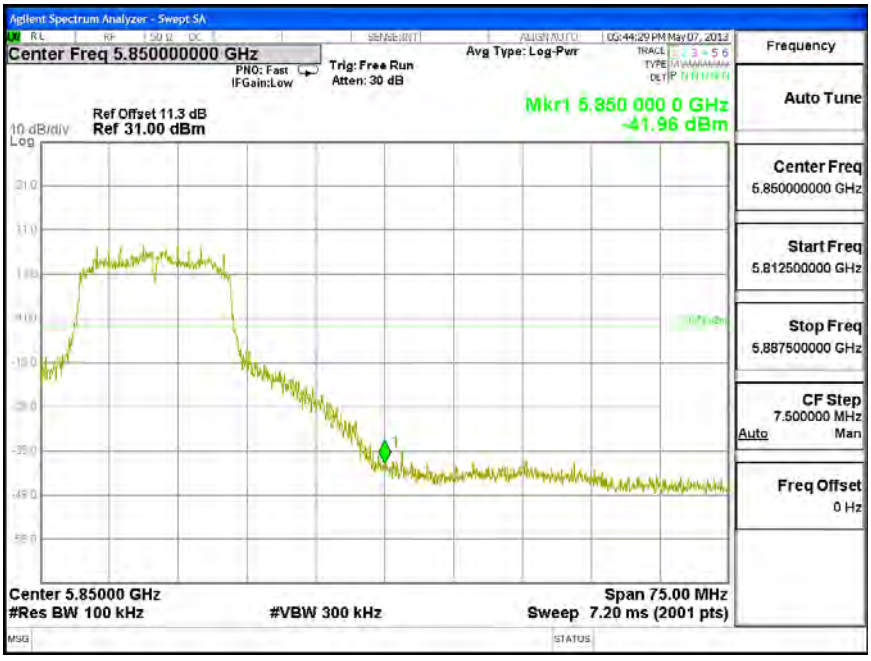
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



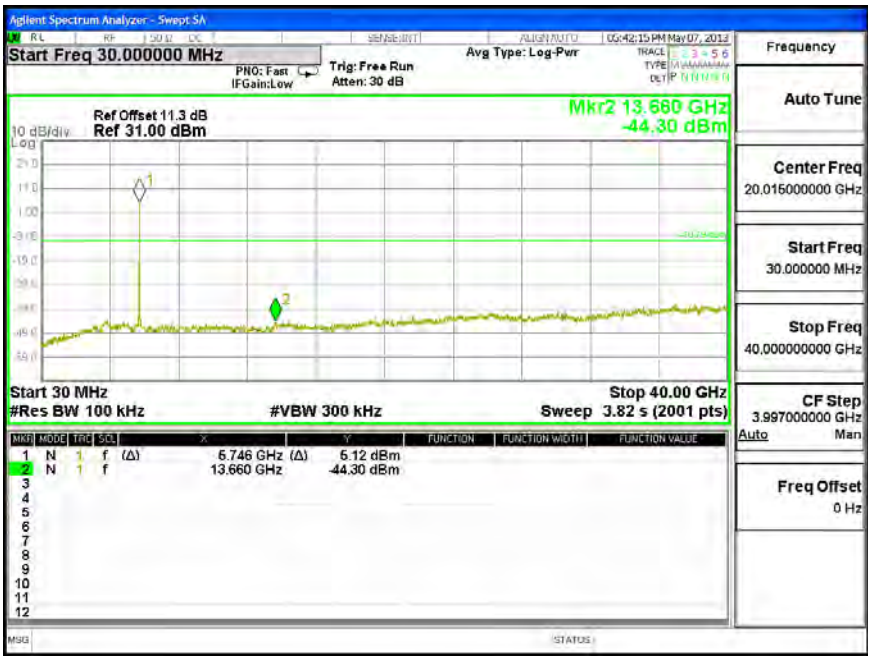
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH

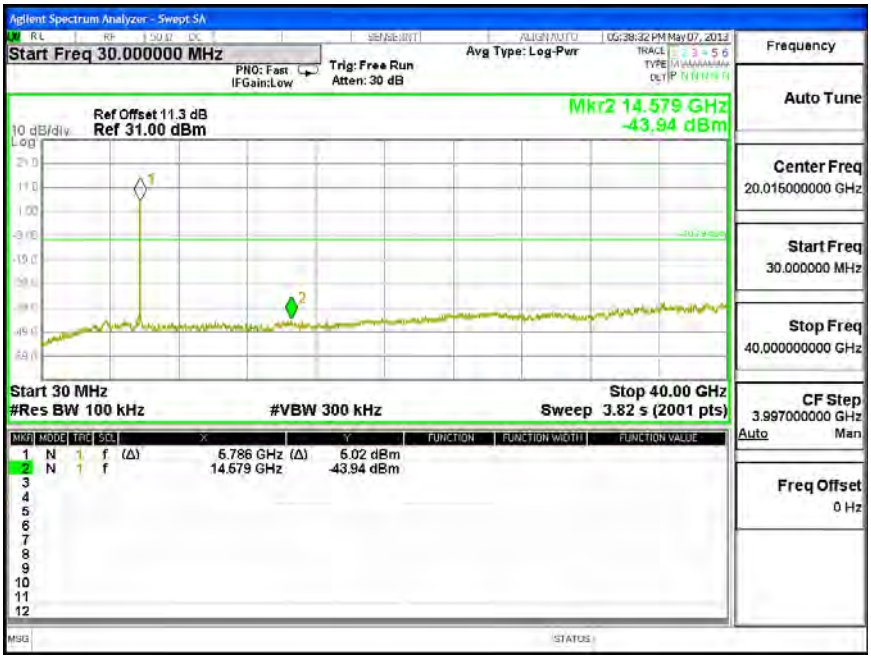


OUT-OF-BAND EMISSIONS

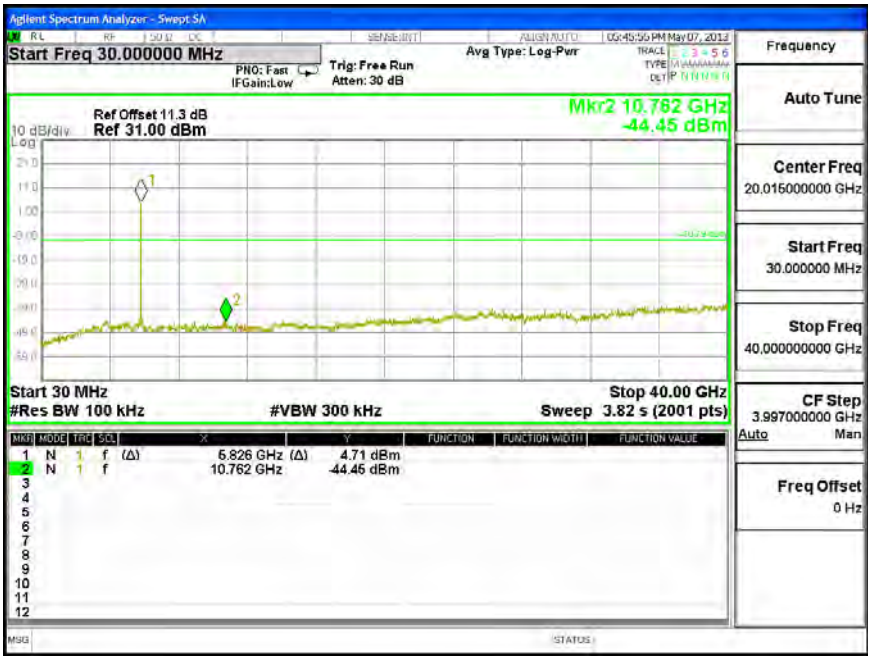
OUT OF BAND LOW CH



OUT OF BAND MID CH



OUT OF BAND HIGH CH

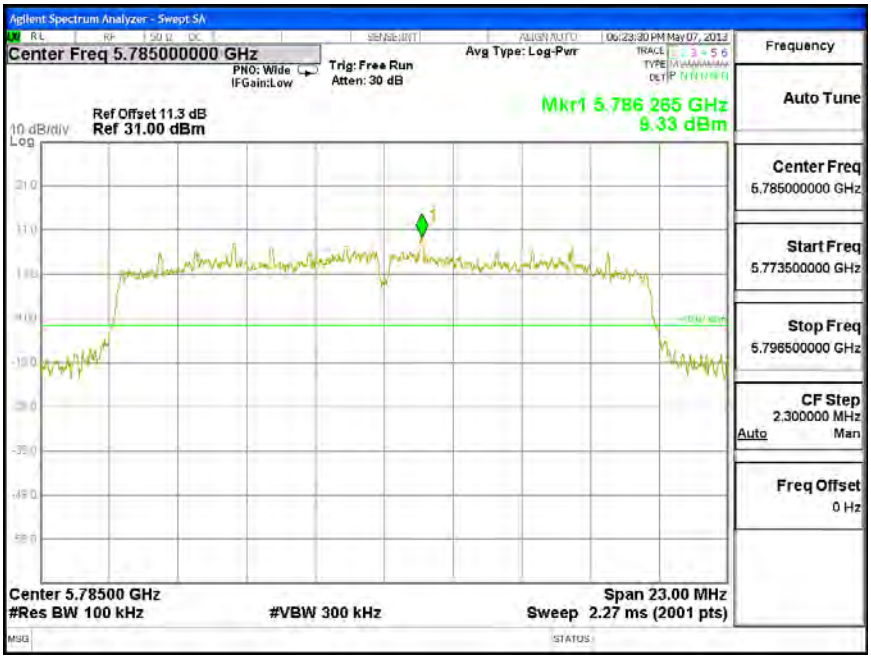


HT20

RESULTS

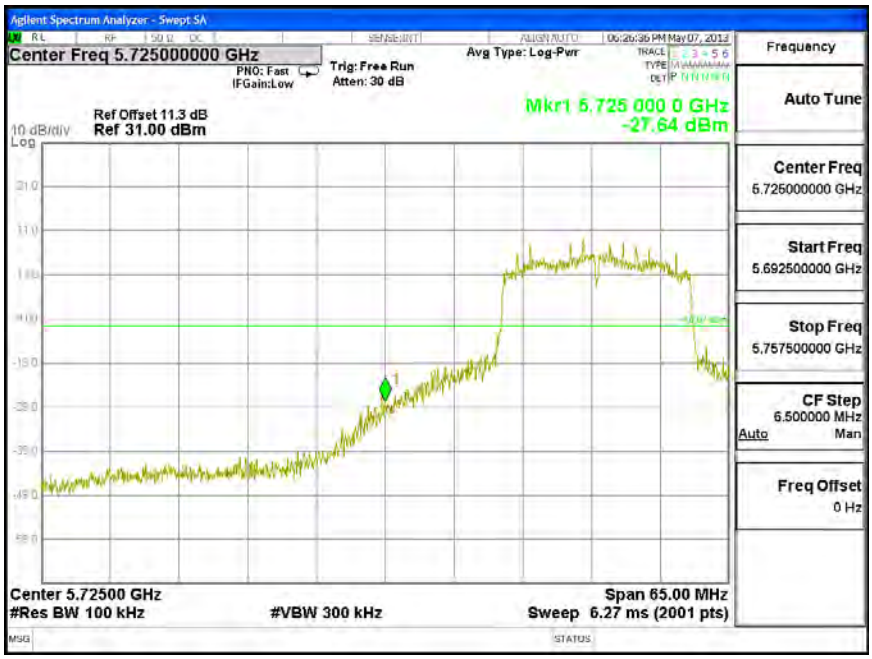
IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



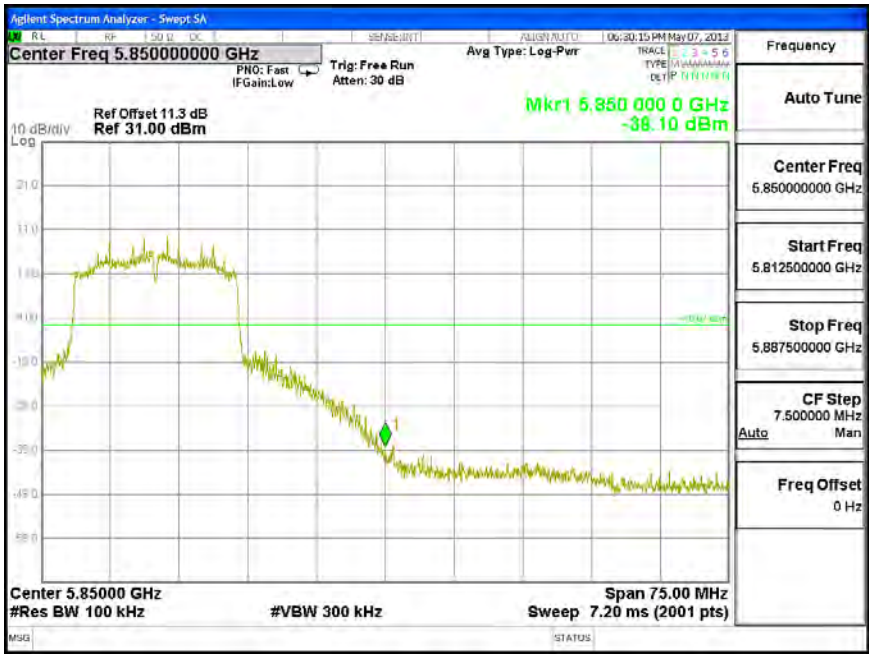
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



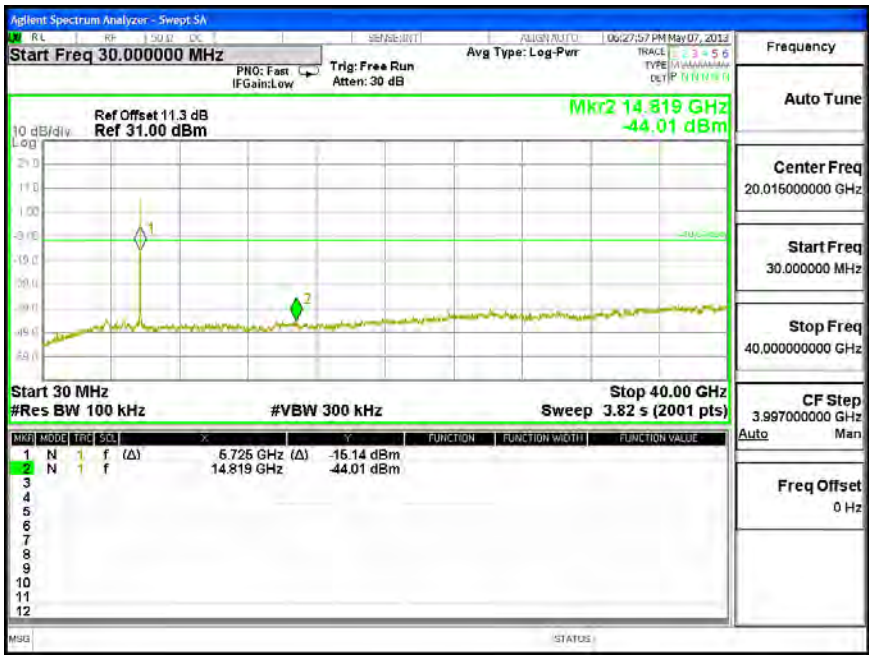
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH

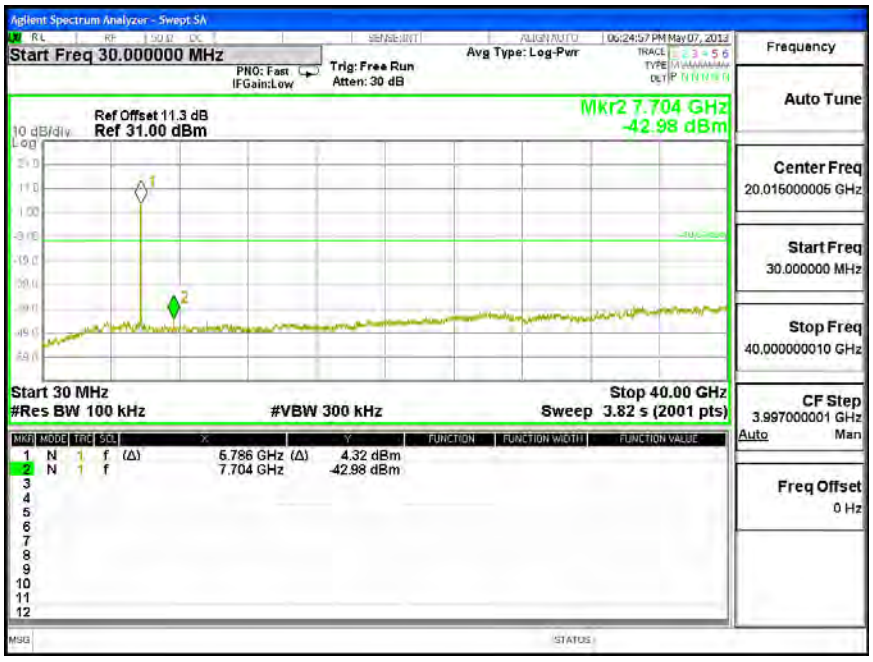


OUT-OF-BAND EMISSIONS

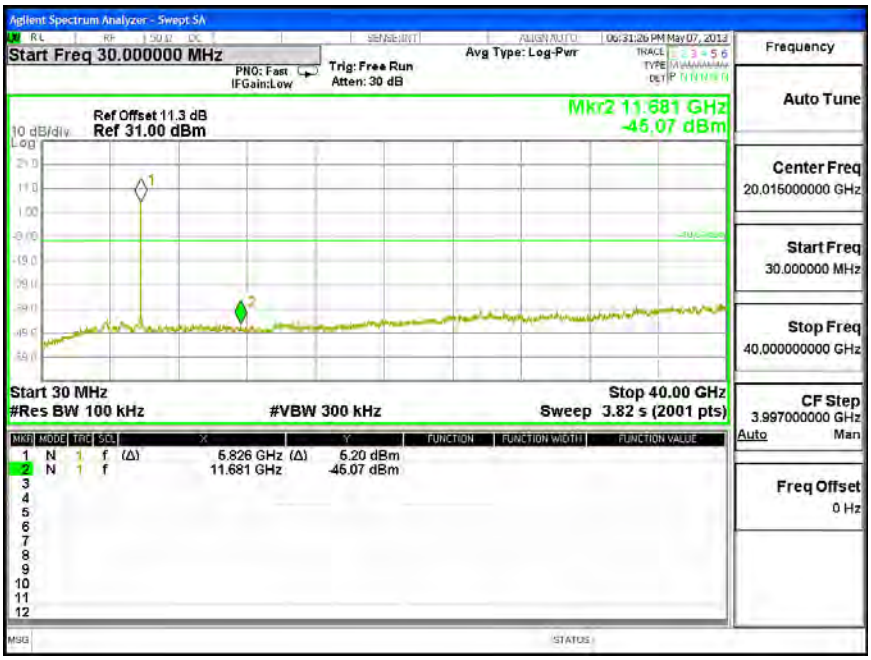
OUT OF BAND LOW CH



OUT OF BAND MID CH



OUT OF BAND HIGH CH

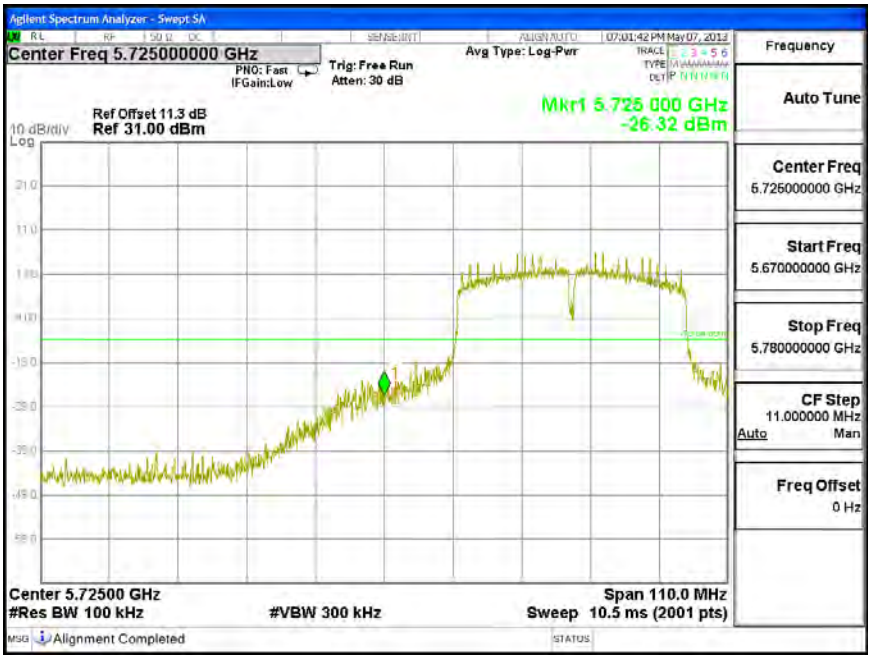


HT40

RESULTS

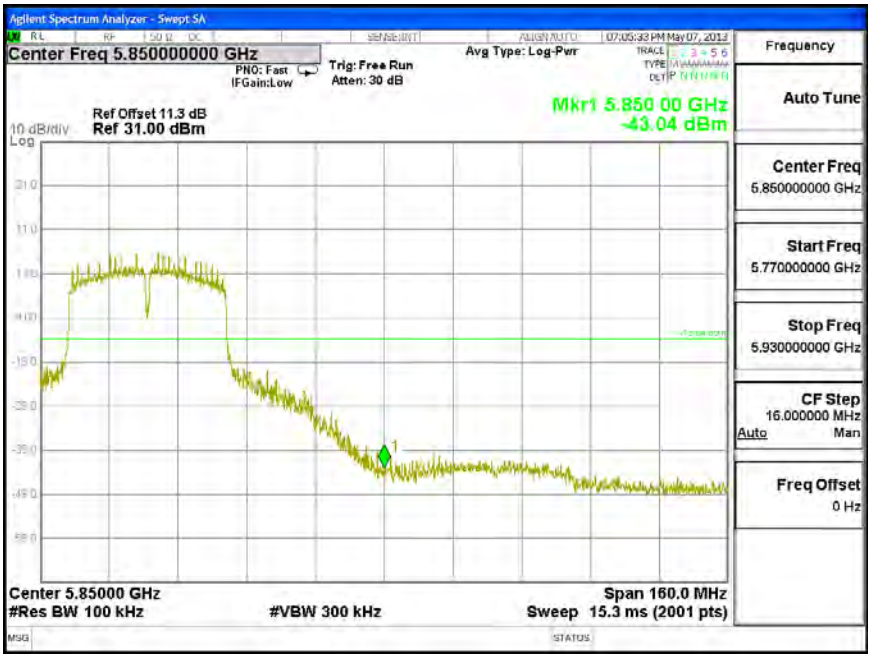
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



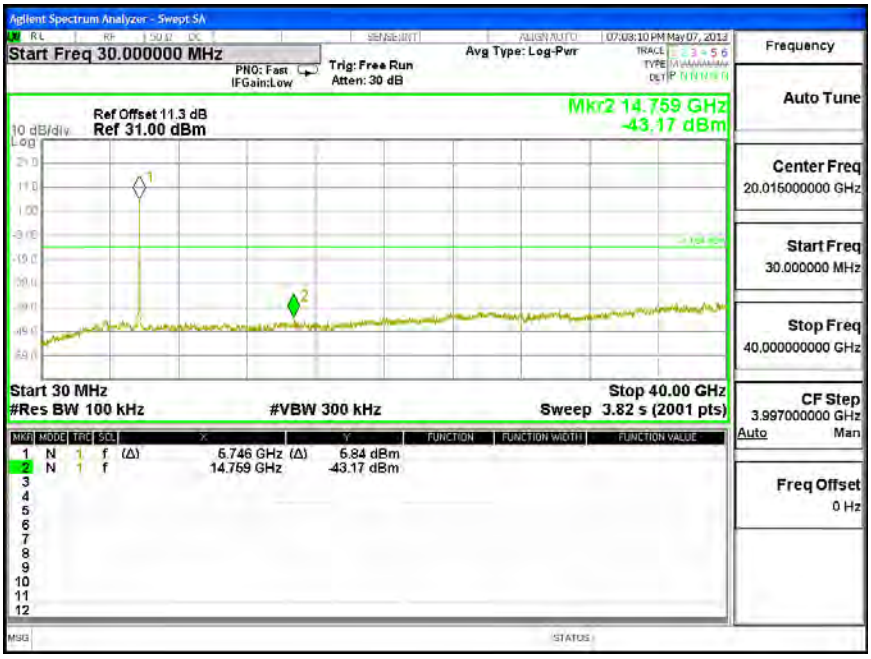
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH

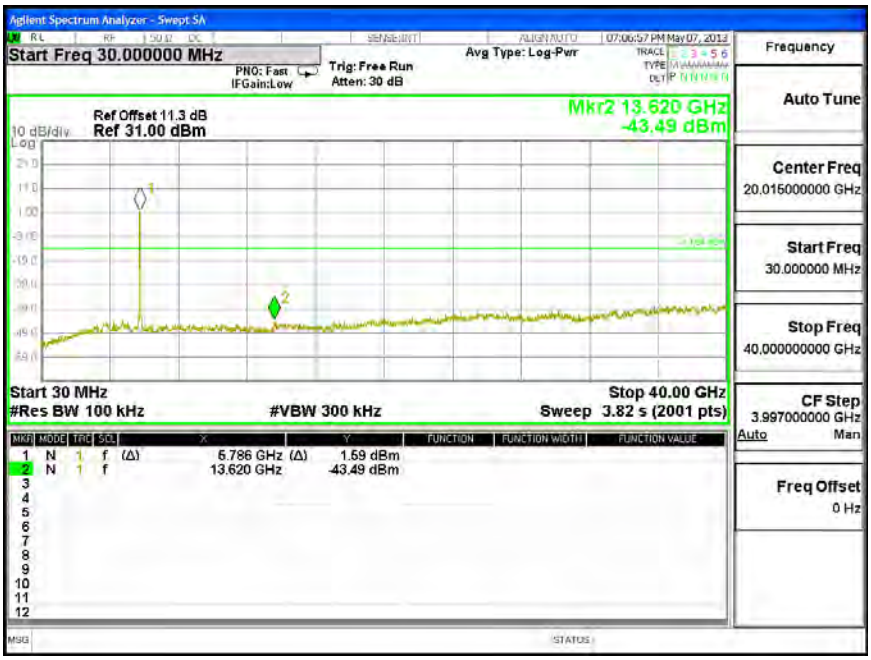


OUT-OF-BAND EMISSIONS

OUT OF BAND LOW CH



OUT OF BAND HIGH CH



8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 1 MHz for peak measurements and as applicable for average measurements.

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

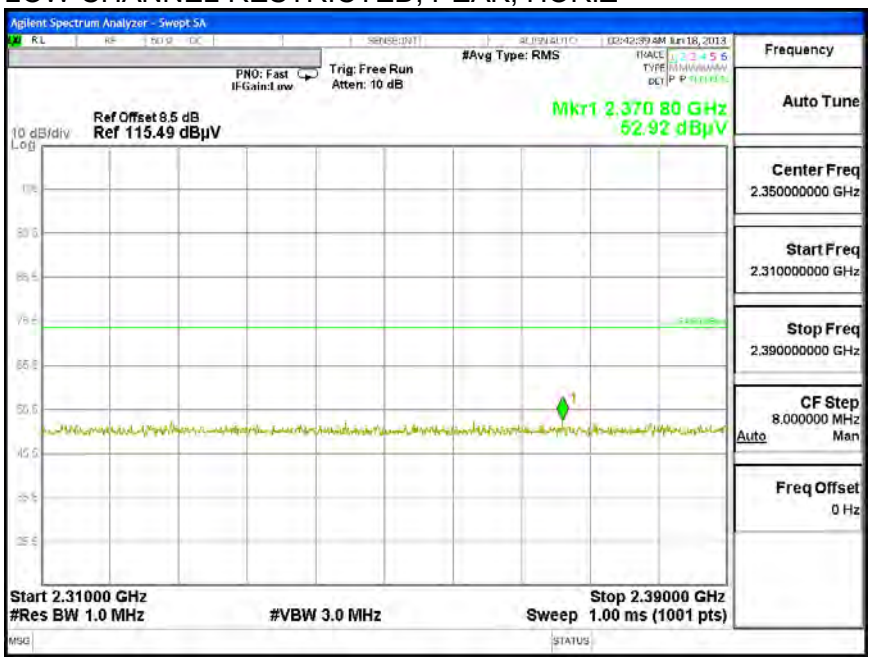
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

8.2. TRANSMITTER ABOVE 1 GHz

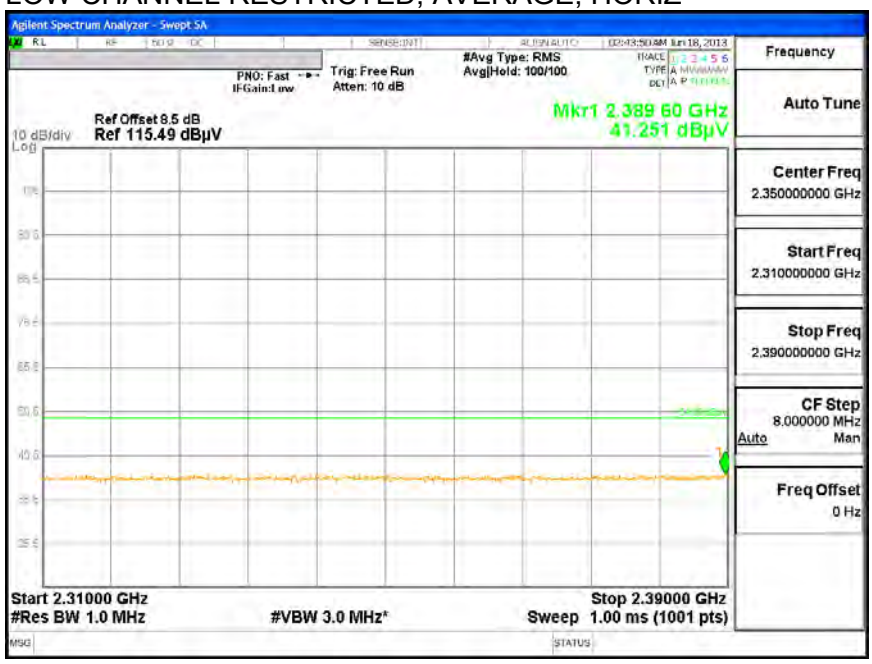
8.2.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

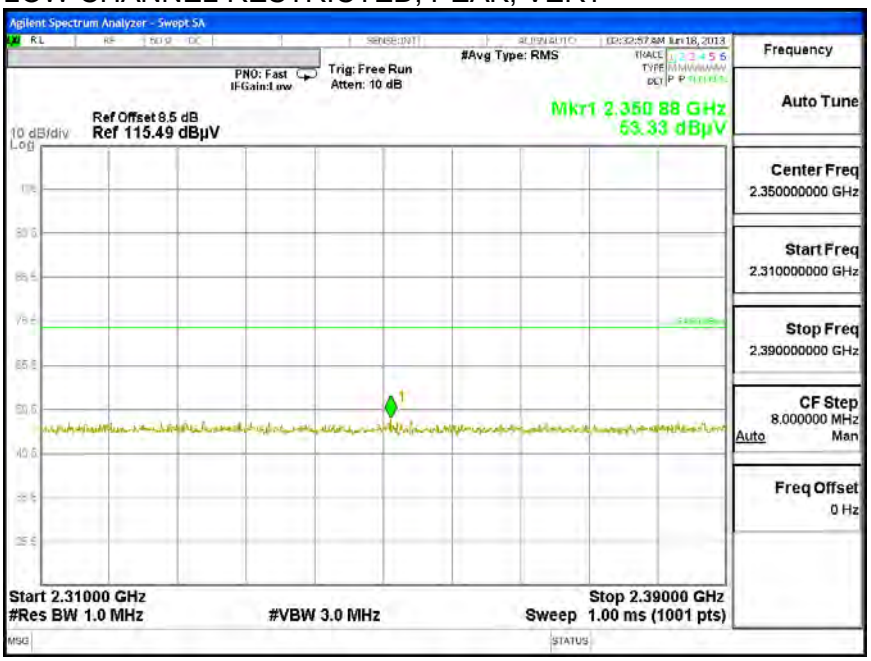
LOW CHANNEL RESTRICTED, PEAK, HORIZ



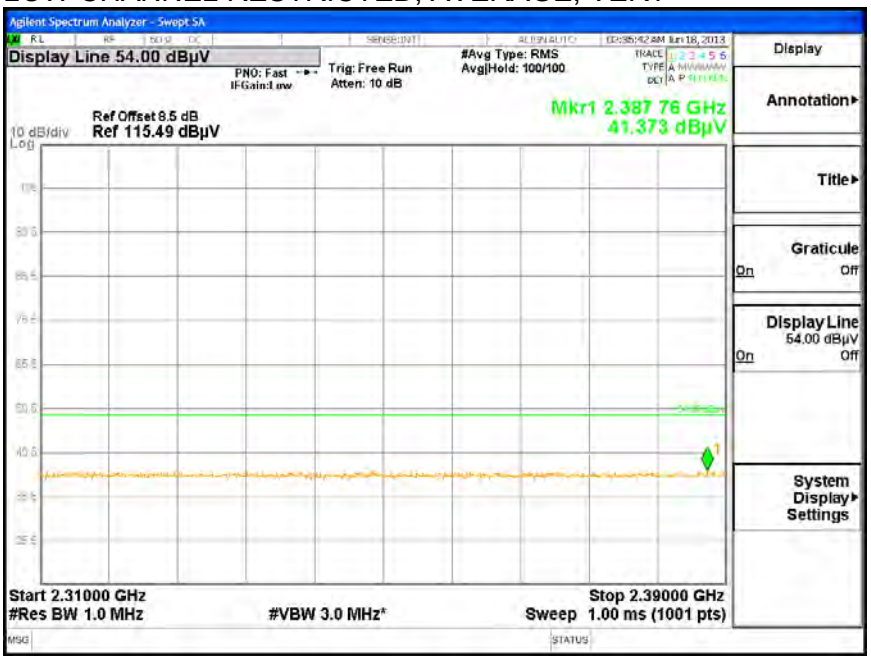
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED, PEAK, VERT

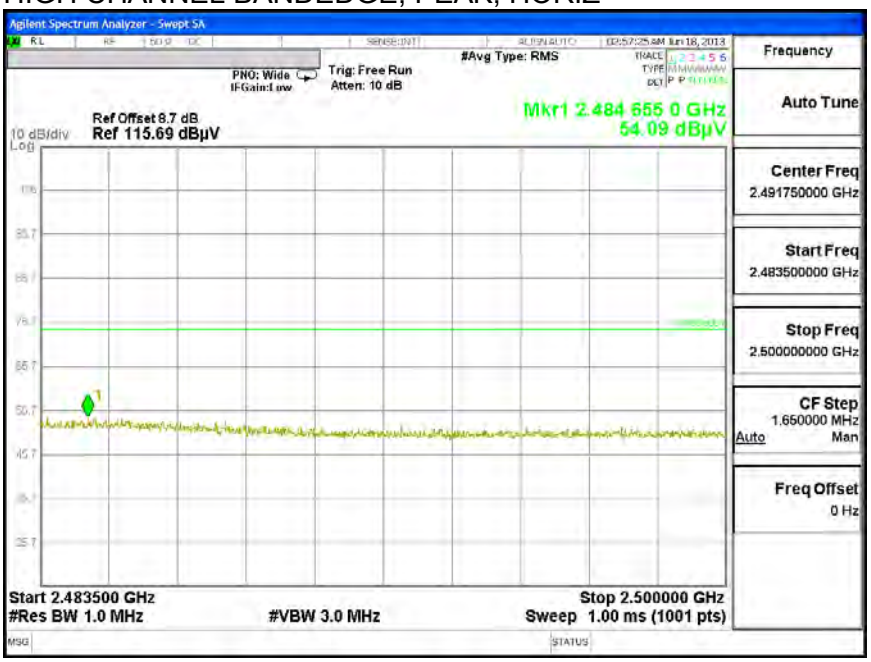


LOW CHANNEL RESTRICTED, AVERAGE, VERT

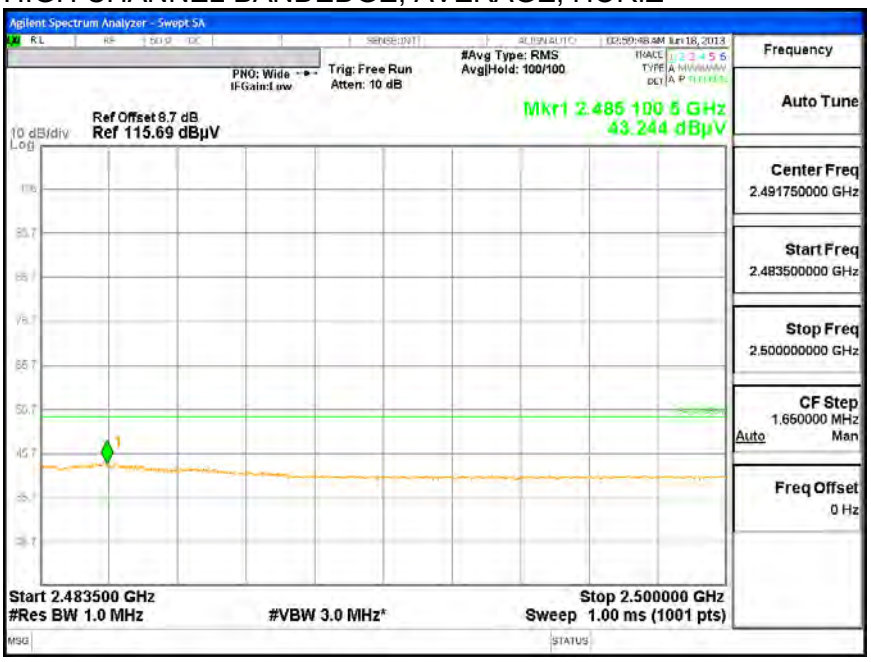


AUTHORIZED BANDEDGE (HIGH CHANNEL)

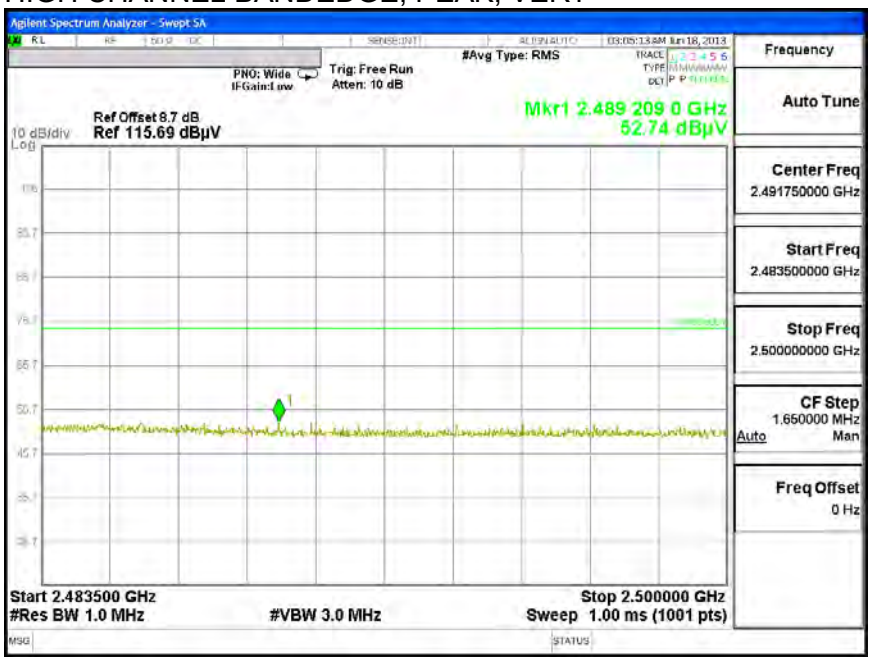
HIGH CHANNEL BANDEDGE, PEAK, HORIZ



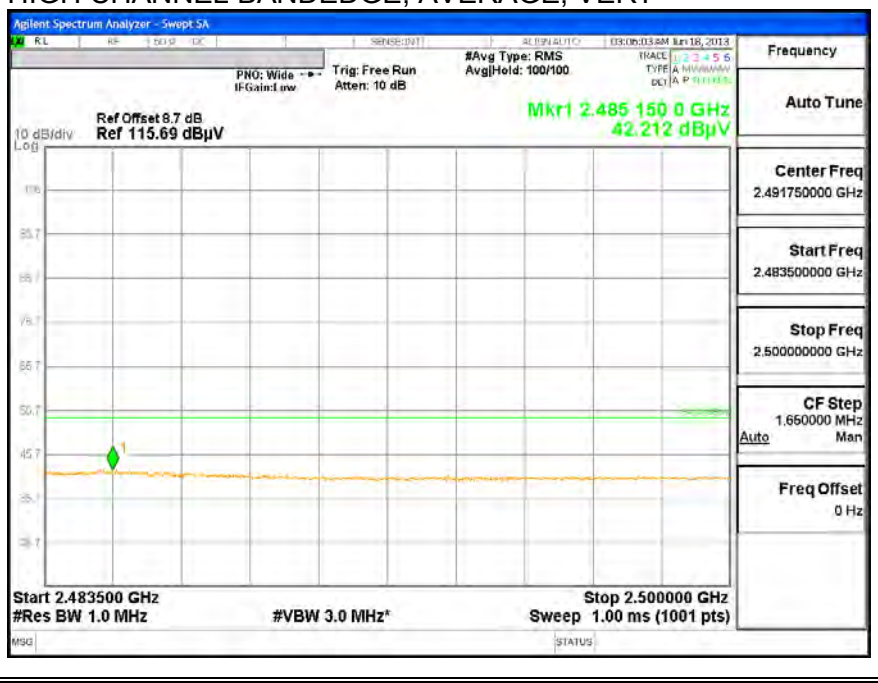
HIGH CHANNEL BANDEDGE, AVERAGE, HORIZ



HIGH CHANNEL BANDEDGE, PEAK, VERT

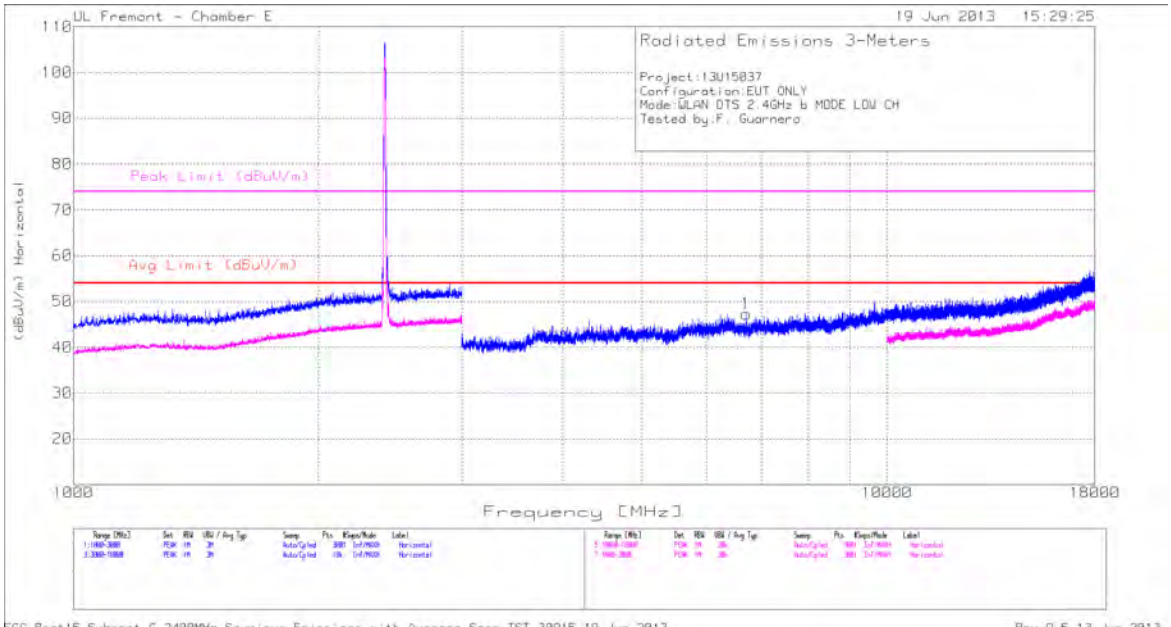


HIGH CHANNEL BANDEDGE, AVERAGE, VERT



HARMONICS AND SPURIOUS EMISSIONS

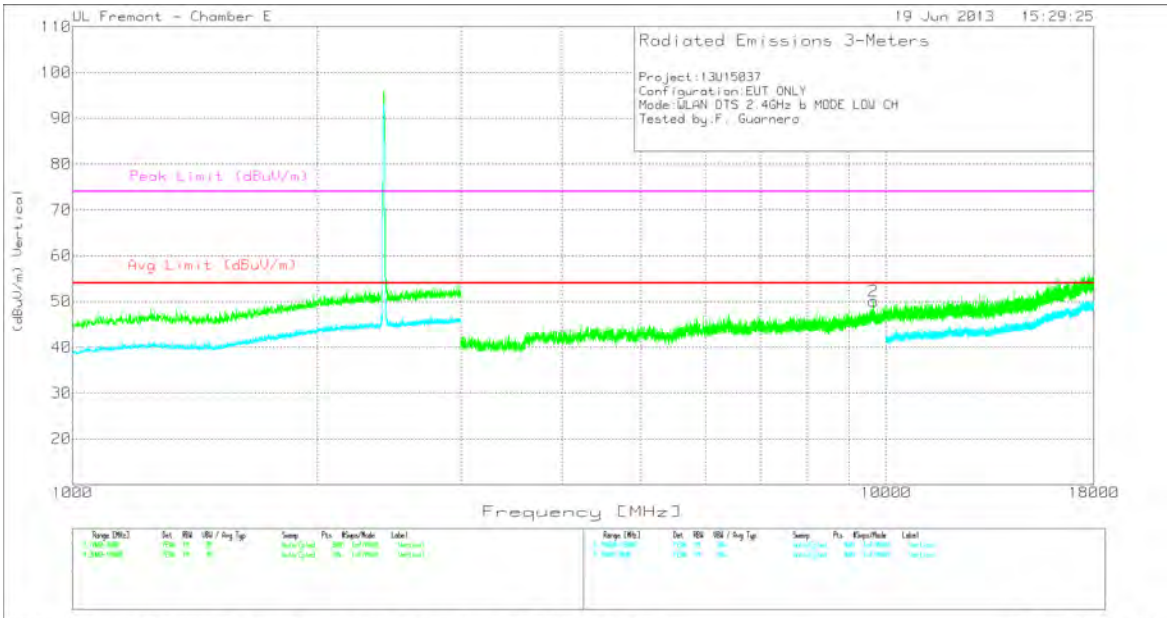
LOW CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	6.712	40.69	PK	35.8	-29.2	47.29	53.97	-6.68	74	-26.71	199	H

PK - Peak detector

LOW CHANNEL VERTICAL

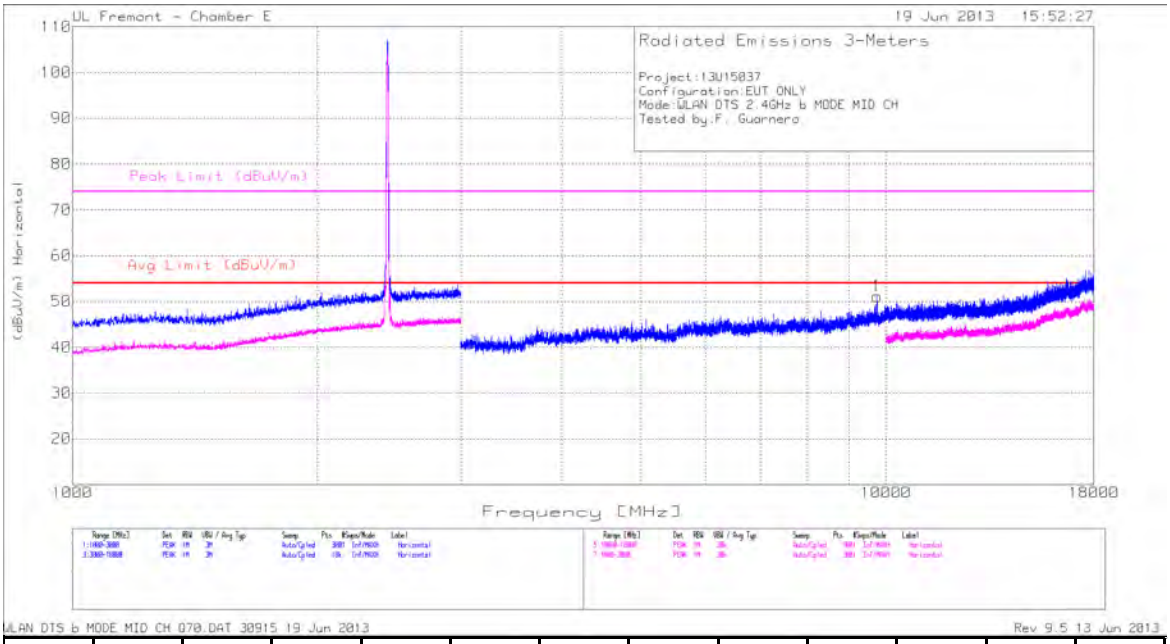


FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 19 Jun 2013 Rev 9.5 13 Jun 2013

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
2	9.648	37.64	PK	37.6	-25.2	50.04	53.97	-3.93	74	-23.96	199	V

PK - Peak detector

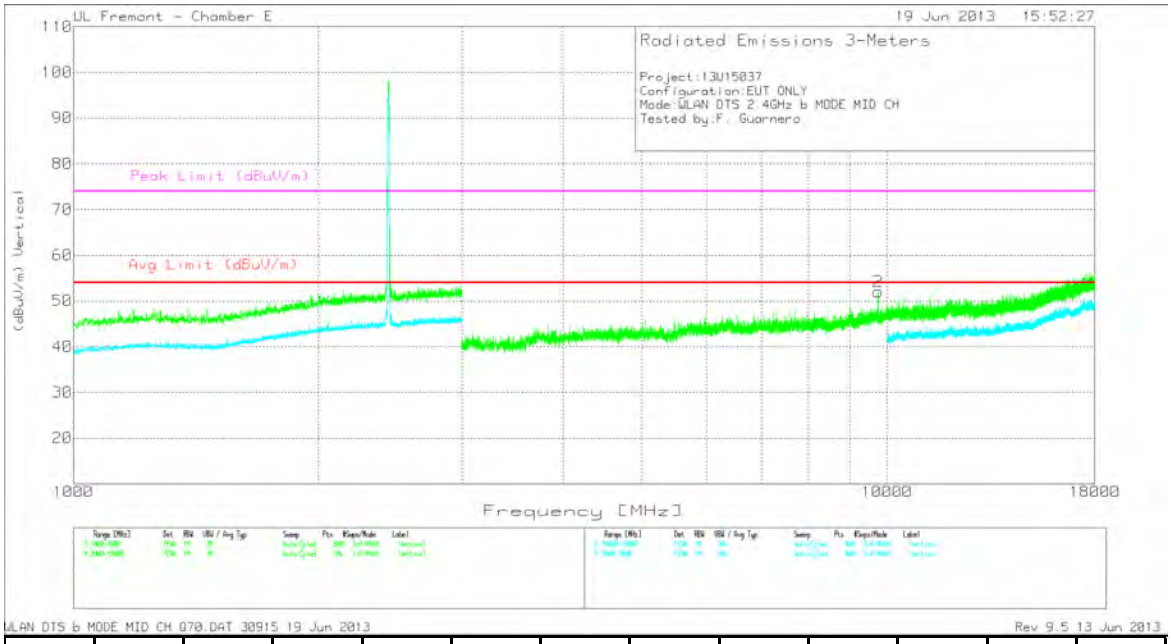
MID CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	9.748	39.43	PK	37.6	-25.9	51.13	53.97	-2.84	74	-22.87	199	H

PK - Peak detector

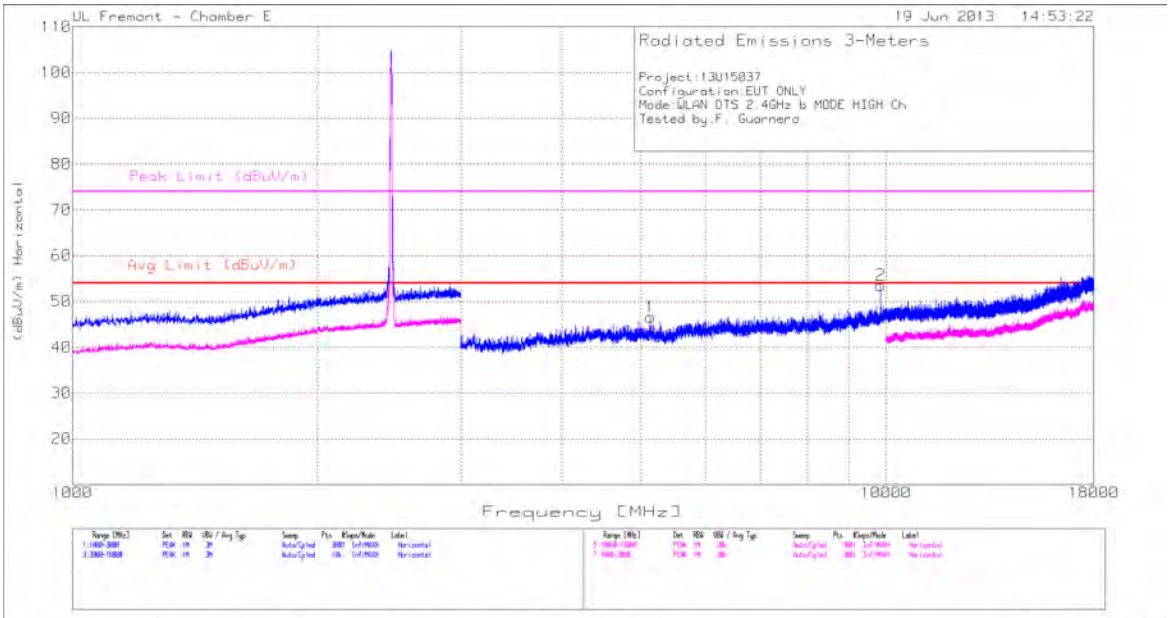
MID CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
2	9.749	40.33	PK	37.6	-25.9	52.03	53.97	-1.94	74	-21.97	199	V

PK - Peak detector

HIGH CHANNEL HORIZONTAL

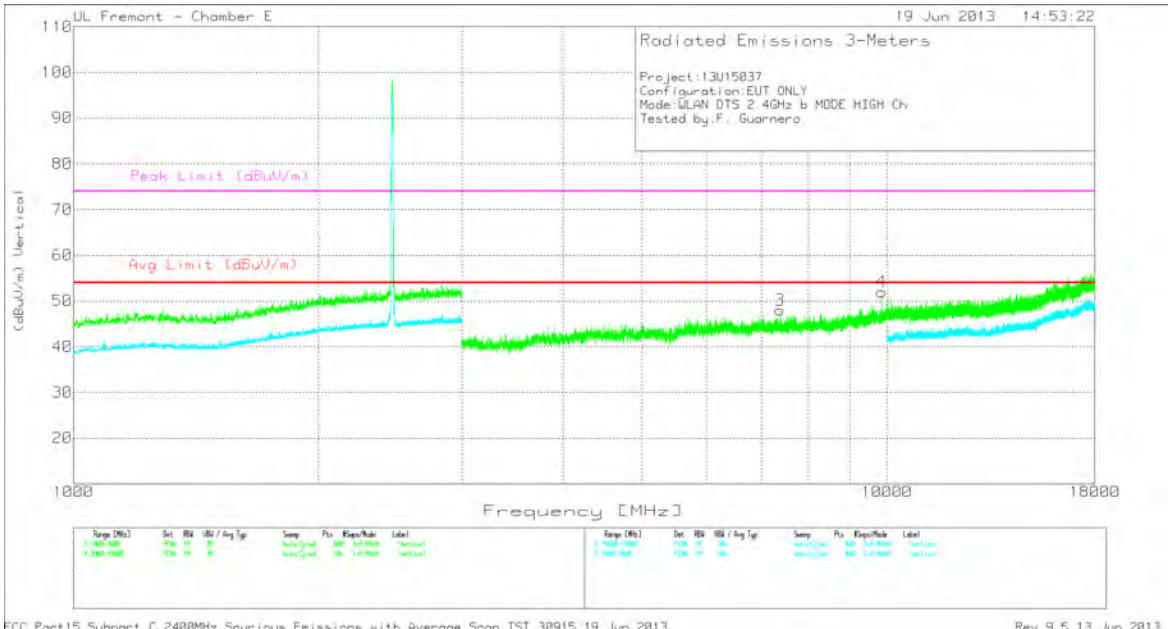


FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 19 Jun 2013 Rev 9.5 13 Jun 2013

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	5.133	43.08	PK	34.6	-31.1	46.58	53.97	-7.39	74	-27.42	199	H
2	9.848	41.71	PK	37.8	-26	53.51	53.97	-0.46	74	-20.49	199	H

PK - Peak detector

HIGH CHANNEL VERTICAL



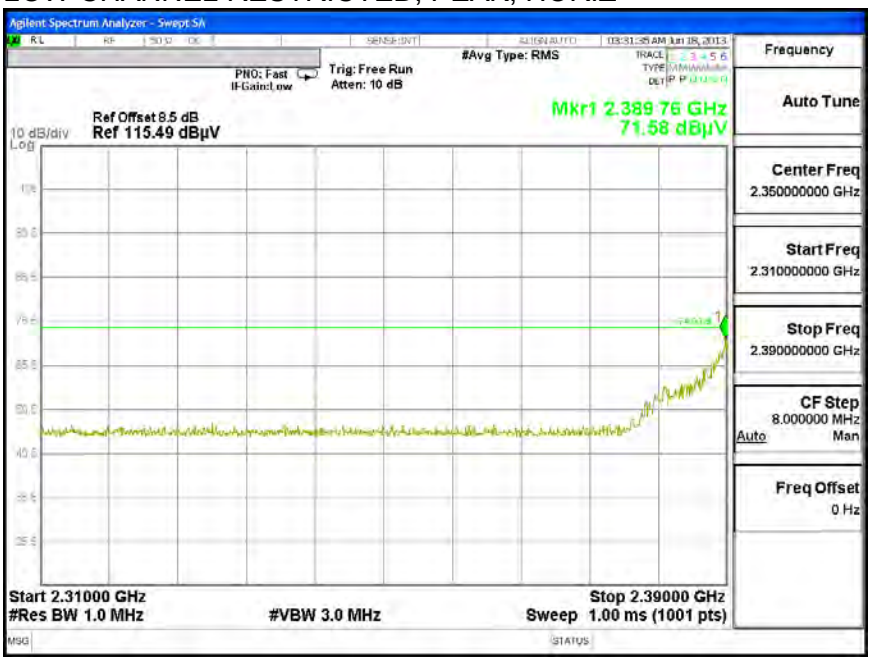
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
3	7.388	40.28	PK	36.1	-28.4	47.98	53.97	-5.99	74	-26.02	199	V
4	9.848	40.19	PK	37.8	-26	51.99	53.97	-1.98	74	-22.01	199	V

PK - Peak detector

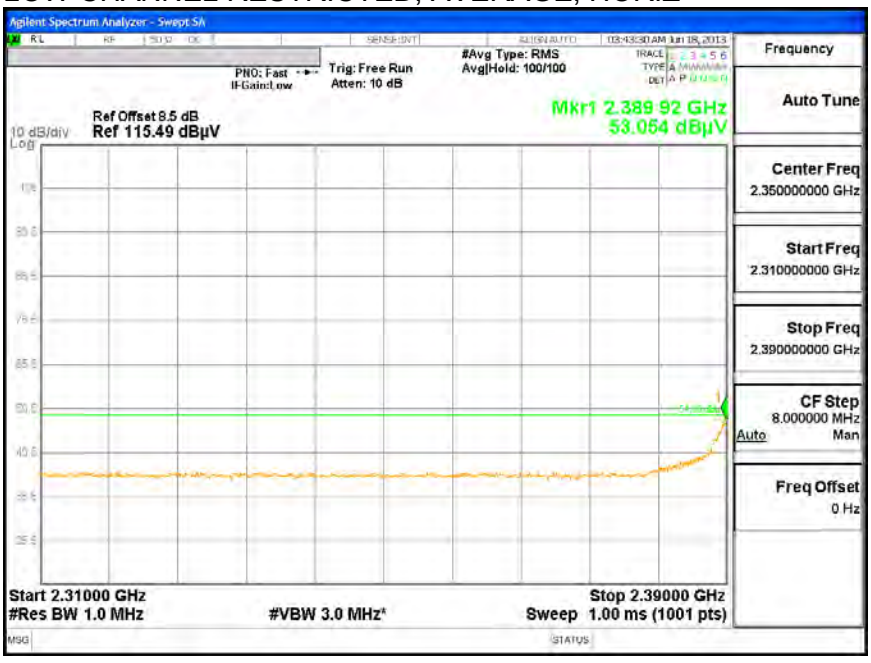
8.2.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

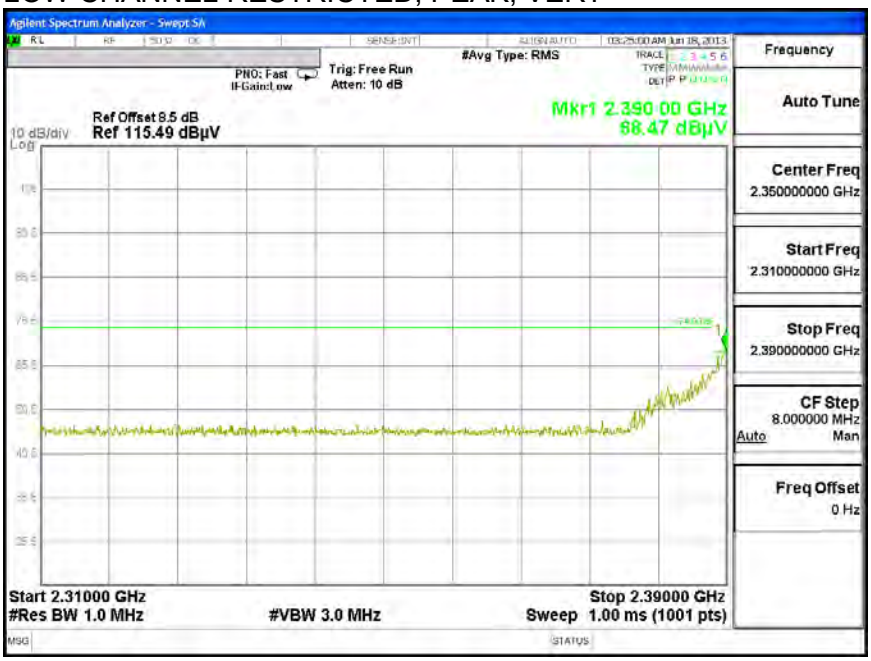
LOW CHANNEL RESTRICTED, PEAK, HORIZ



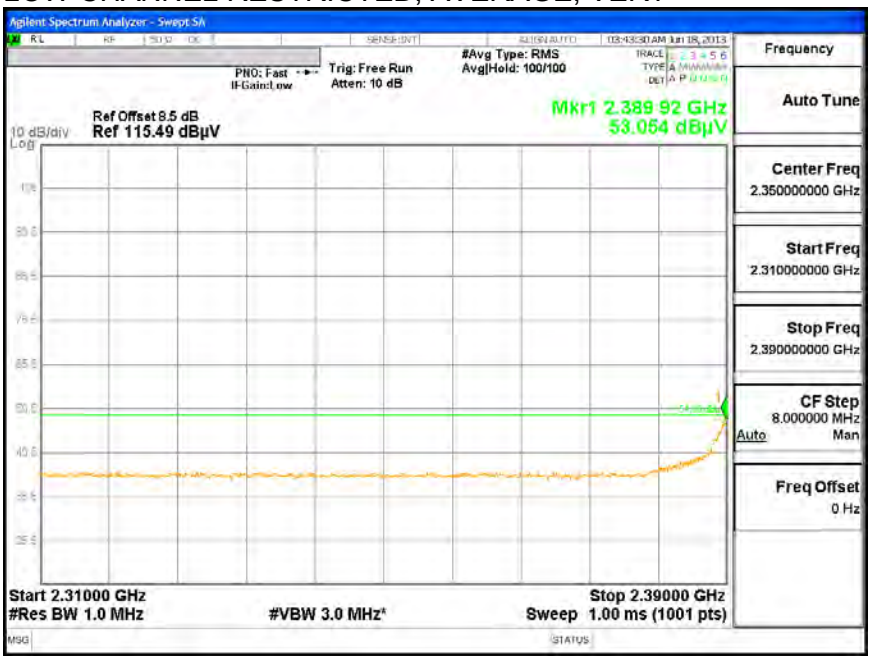
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



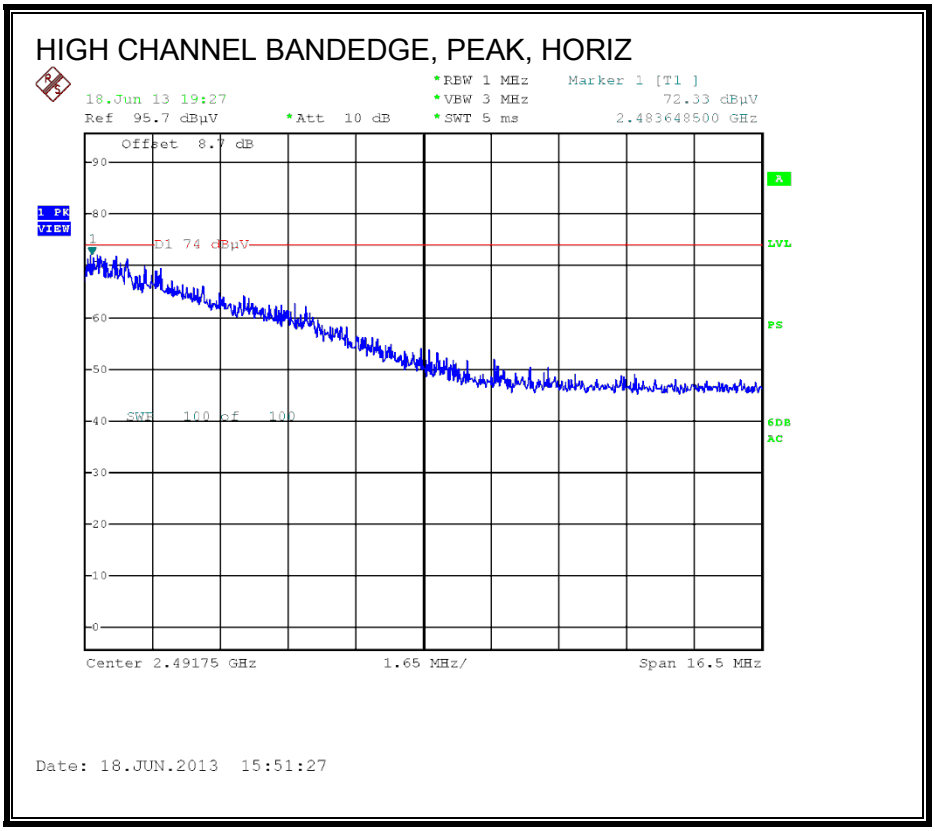
LOW CHANNEL RESTRICTED, PEAK, VERT

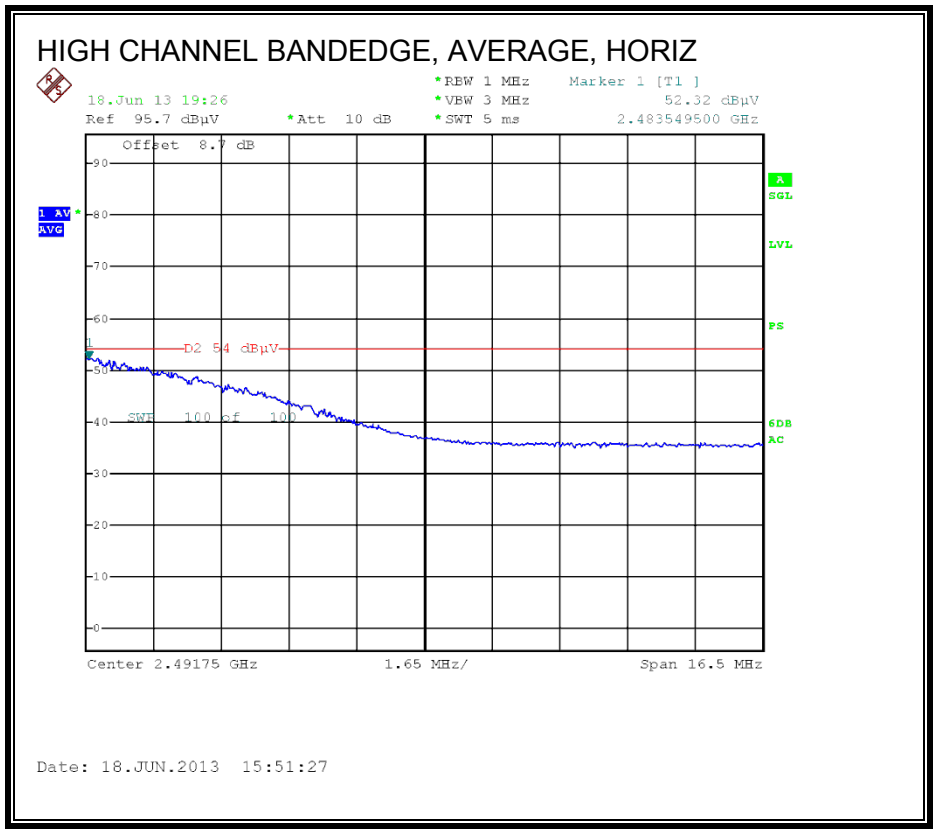


LOW CHANNEL RESTRICTED, AVERAGE, VERT

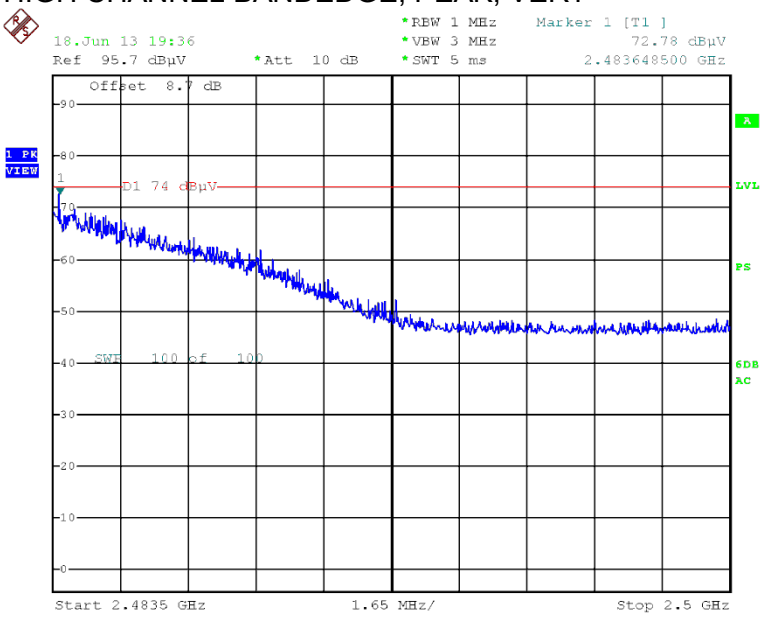


AUTHORIZED BANDEDGE (HIGH CHANNEL)



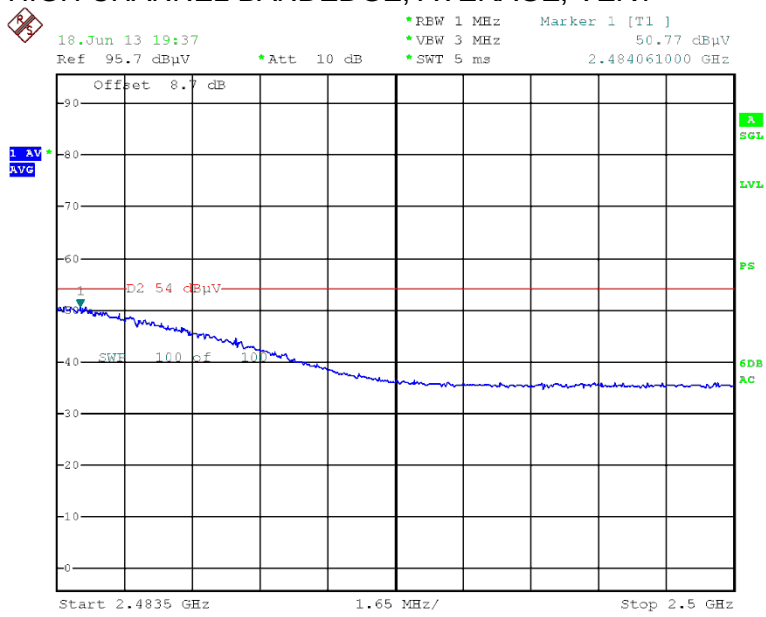


HIGH CHANNEL BANDEDGE, PEAK, VERT



Date: 18.JUN.2013 15:51:27

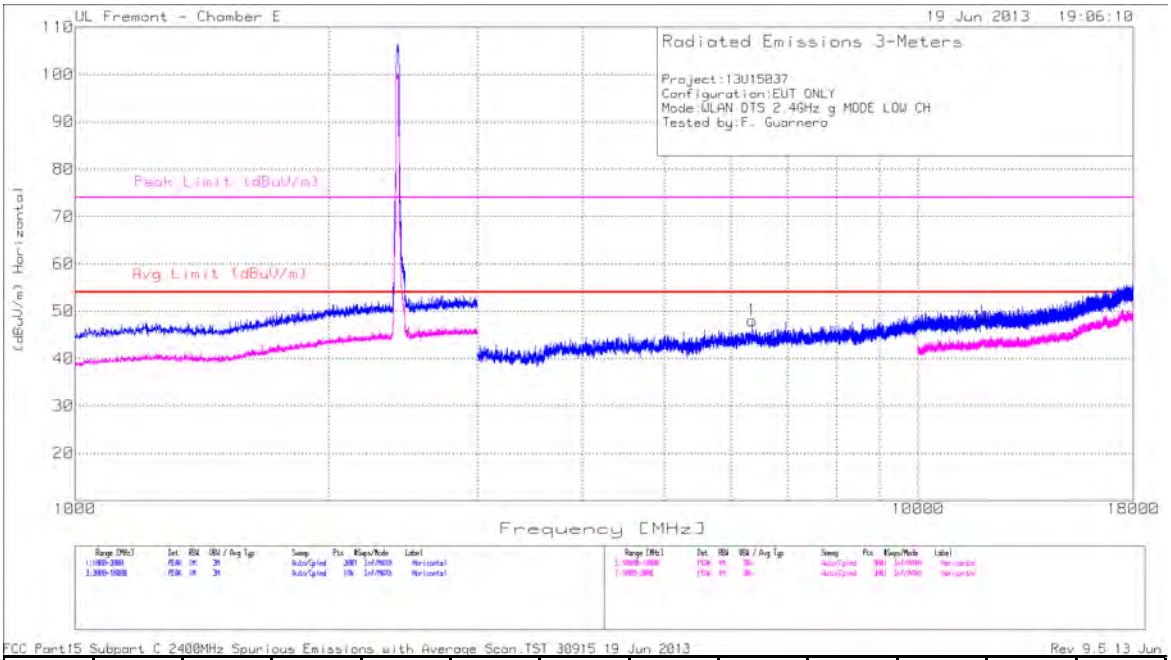
HIGH CHANNEL BANDEDGE, AVERAGE, VERT



Date: 18.JUN.2013 15:51:27

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL

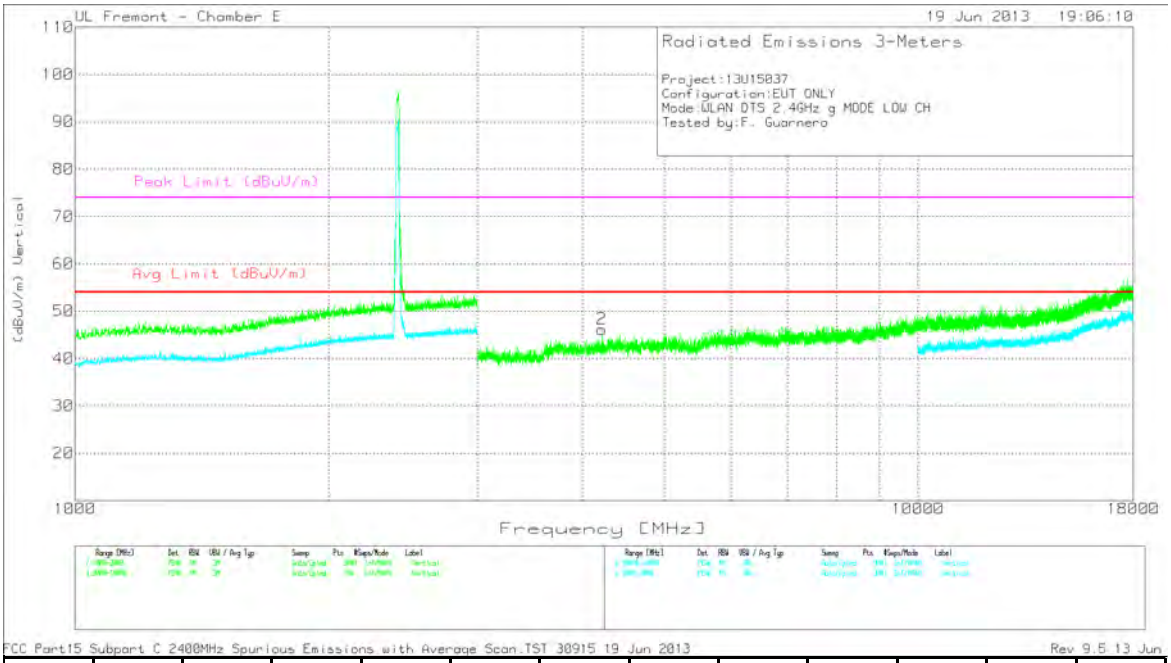


FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 19 Jun 2013 Rev 9.5 13 Jun

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	6.359	41.24	PK	35.9	-29.1	48.04	53.97	-5.93	74	-25.96	199	H

PK - Peak detector

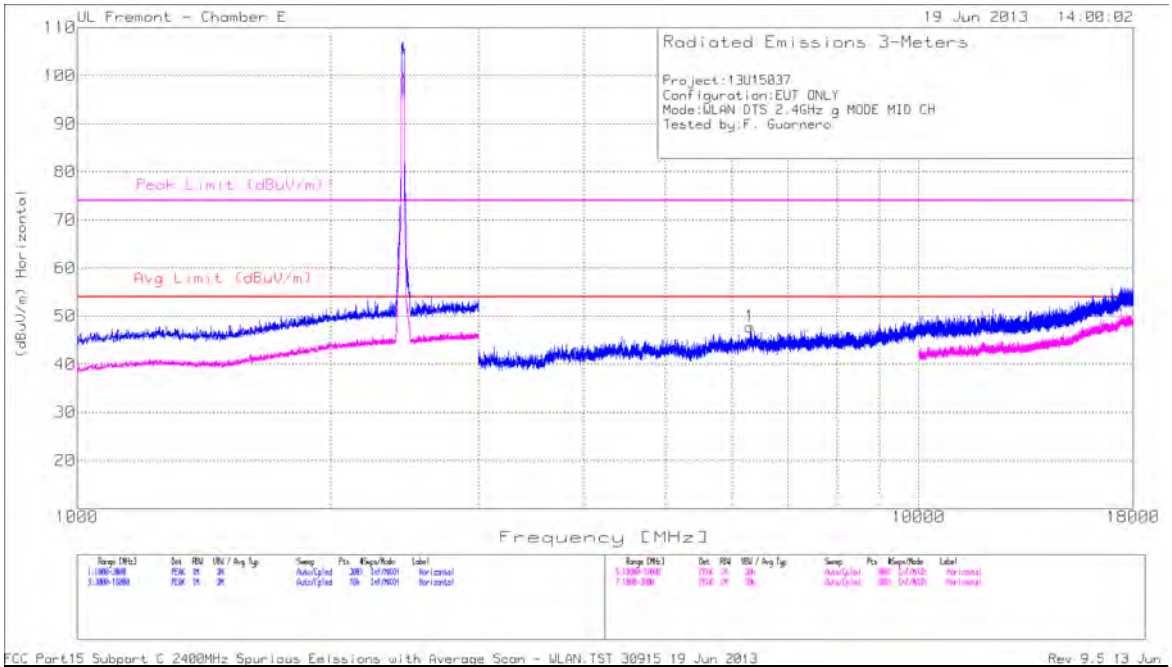
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
2	4.218	44.66	PK	34	-32.5	46.16	53.97	-7.81	74	-27.84	199	V

PK - Peak detector

MID CHANNEL HORIZONTAL

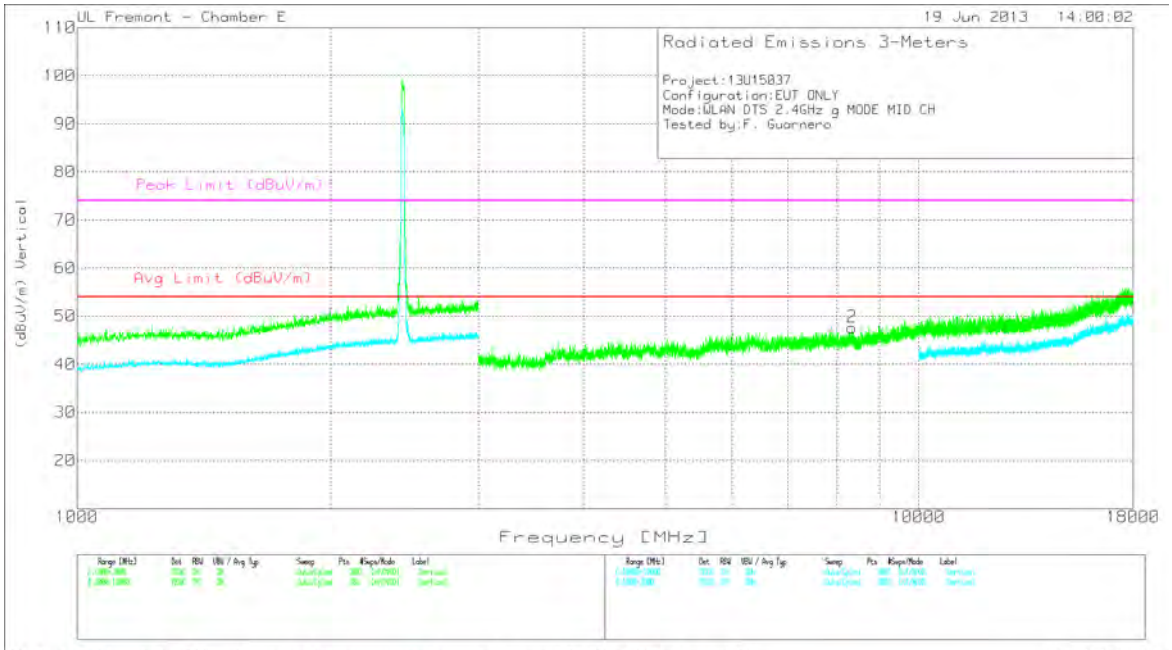


FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan - WLAN.TST 30915 19 Jun 2013 Rev 9.5 13 Jun

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	6.309	41.18	PK	35.9	-29.3	47.78	53.97	-6.19	74	-26.22	199	H

PK - Peak detector

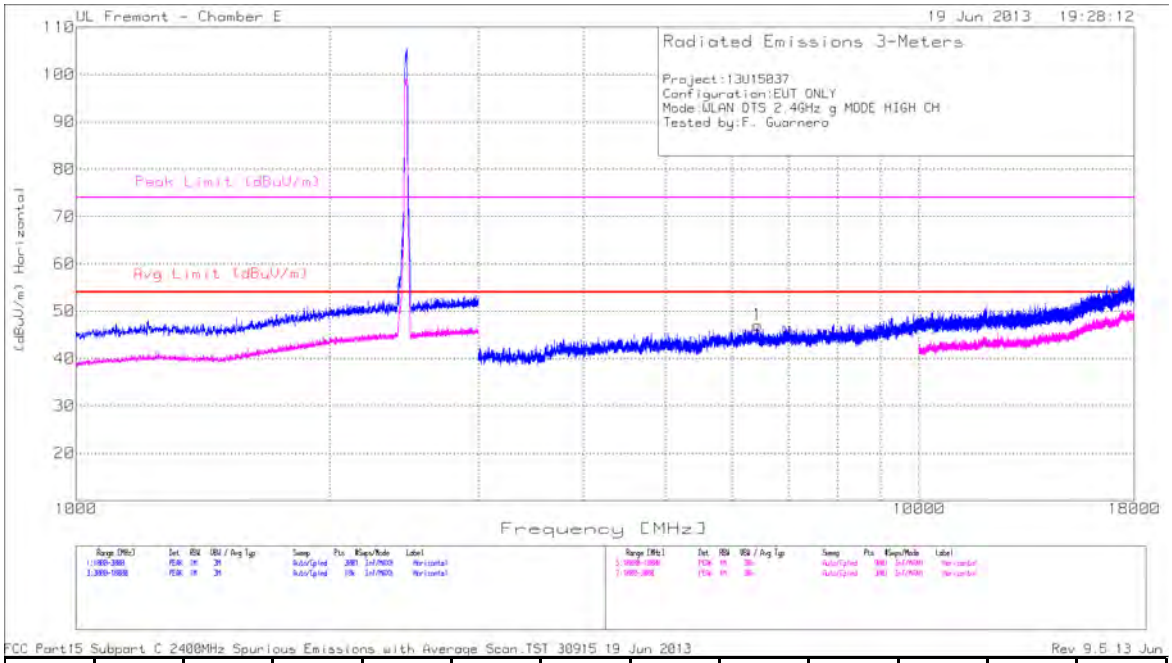
MID CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
2	8.336	38.65	PK	36.2	-27.2	47.65	53.97	-6.32	74	-26.35	199	V

PK - Peak detector

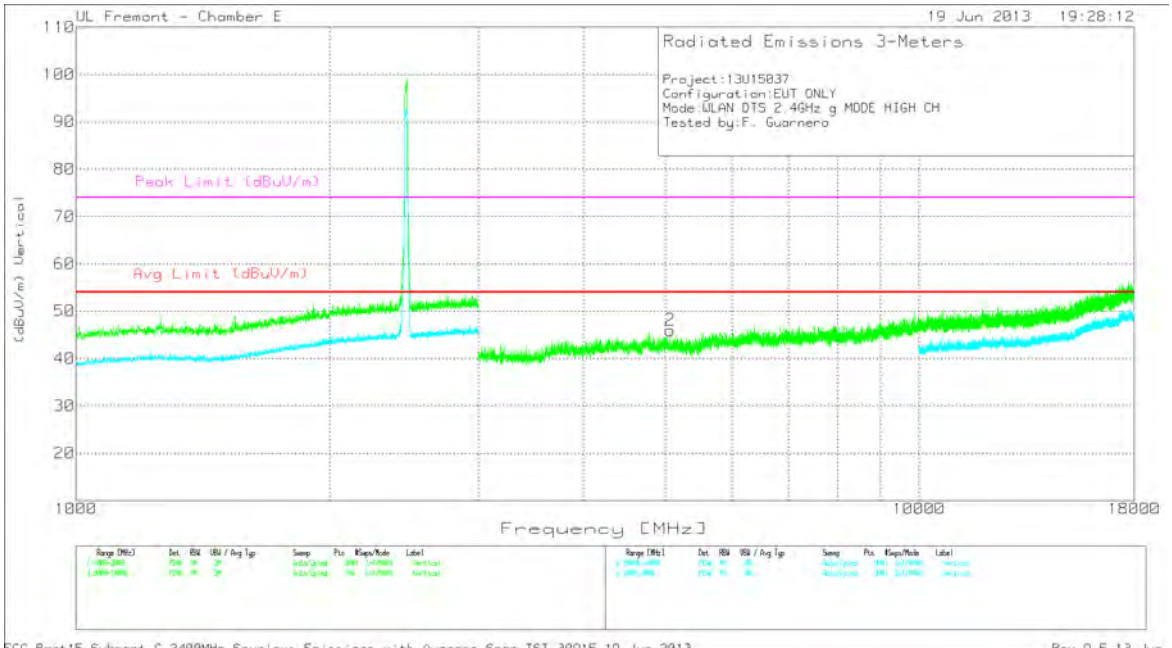
HIGH CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	6.436	40.88	PK	35.8	-29.6	47.08	53.97	-6.89	74	-26.92	199	H

PK - Peak detector

HIGH CHANNEL VERTICAL



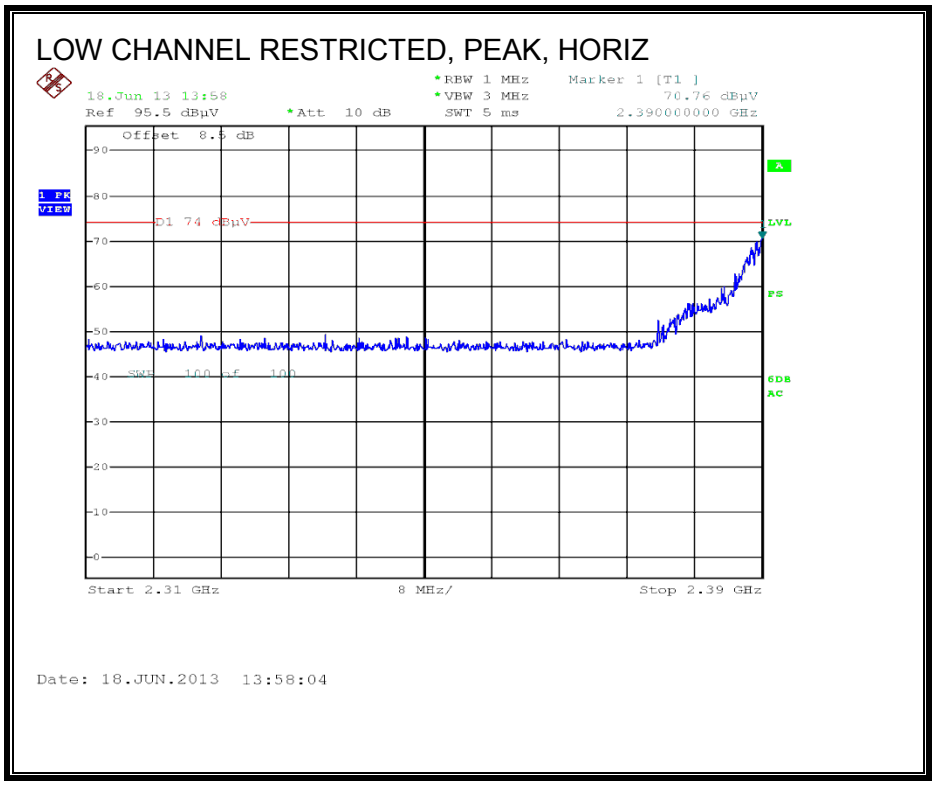
FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan:TST 30915 19 Jun 2013 Rev 9.5 13 Jun

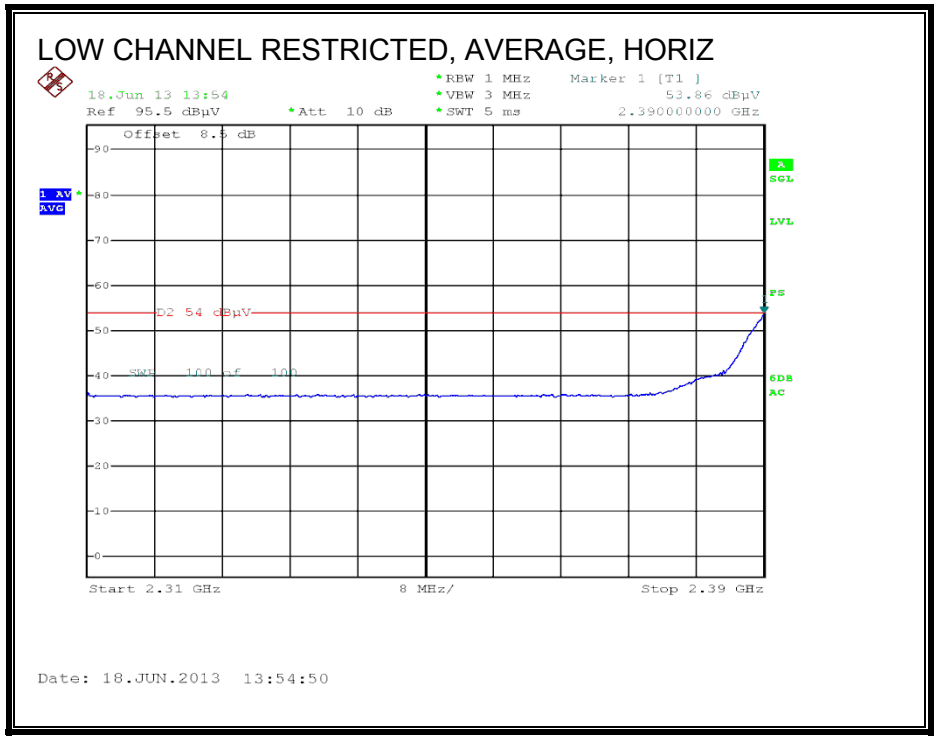
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
2	5.067	42.86	PK	34.5	-31.4	45.96	53.97	-8.01	74	-28.04	199	V

PK - Peak detector

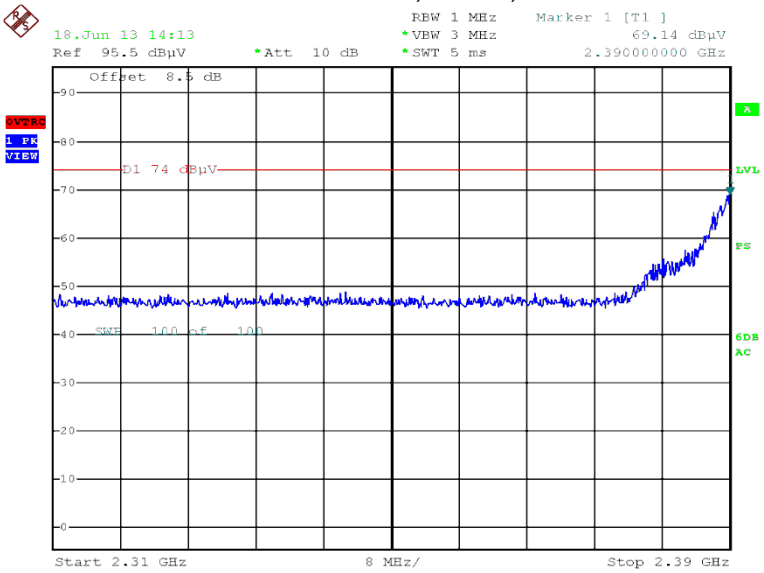
8.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



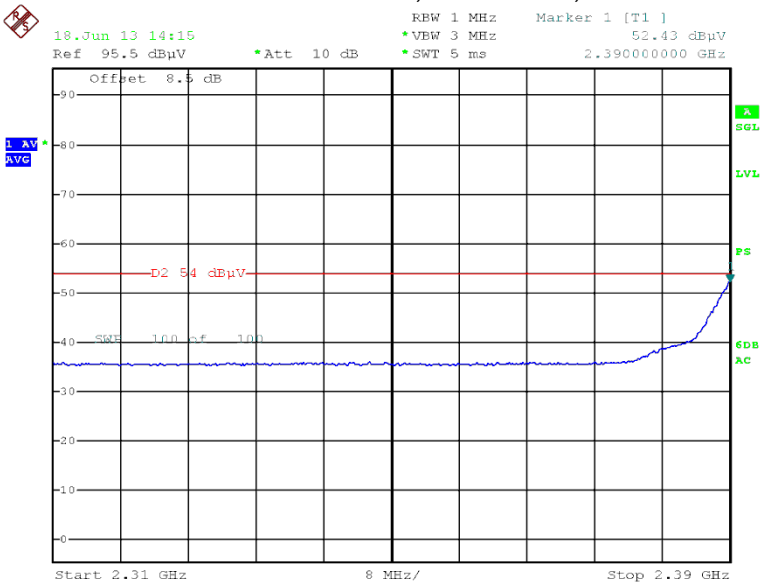


LOW CHANNEL RESTRICTED, PEAK, VERT



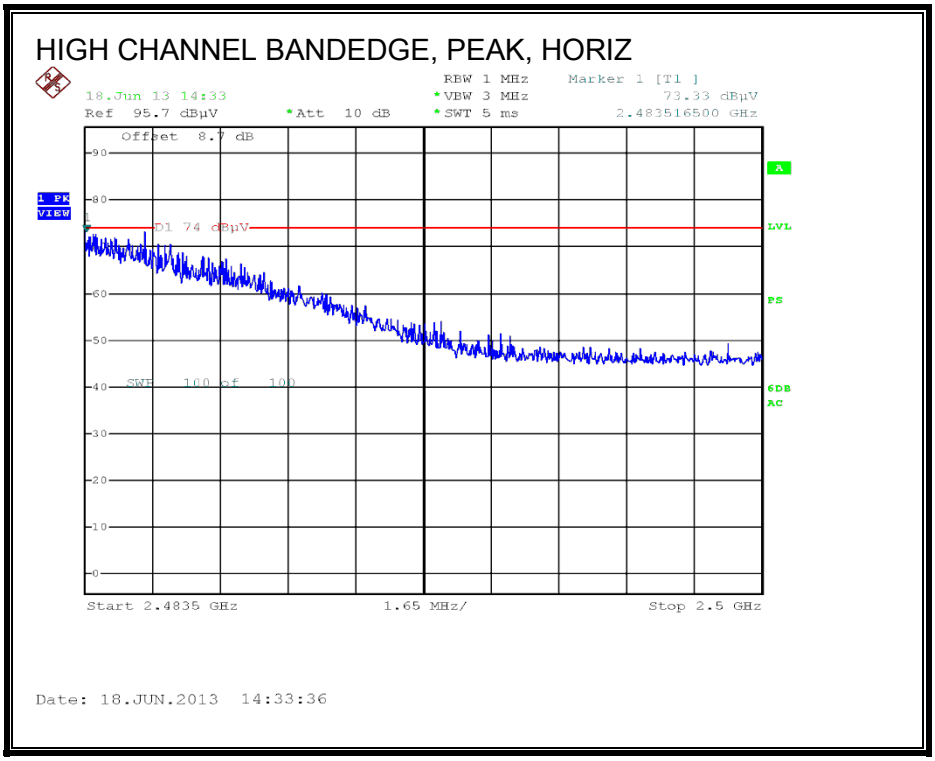
Date: 18.JUN.2013 14:13:49

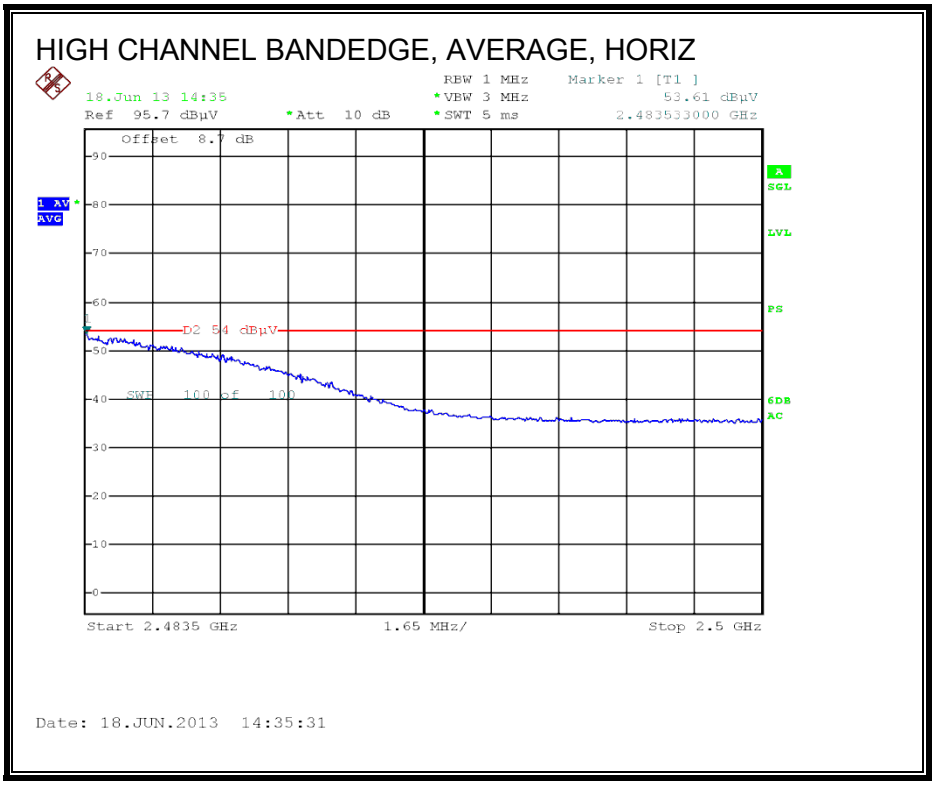
LOW CHANNEL RESTRICTED, AVERAGE, VERT



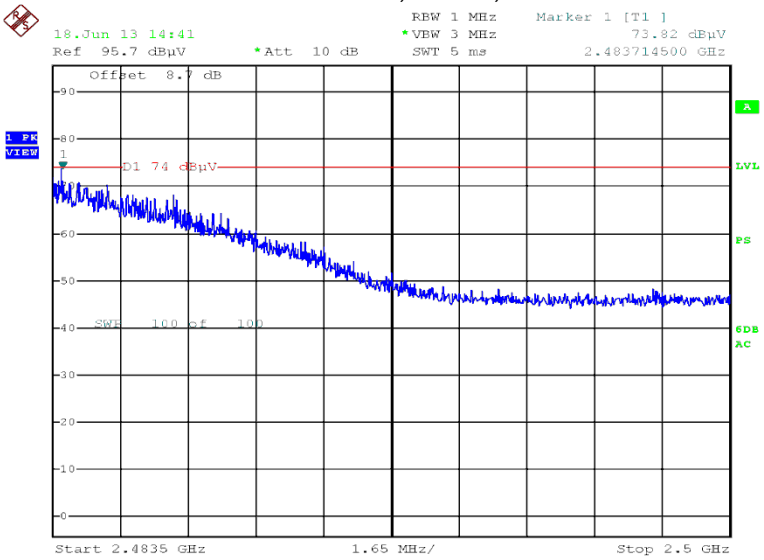
Date: 18.JUN.2013 14:15:16

AUTHORIZED BANDEDGE (HIGH CHANNEL)



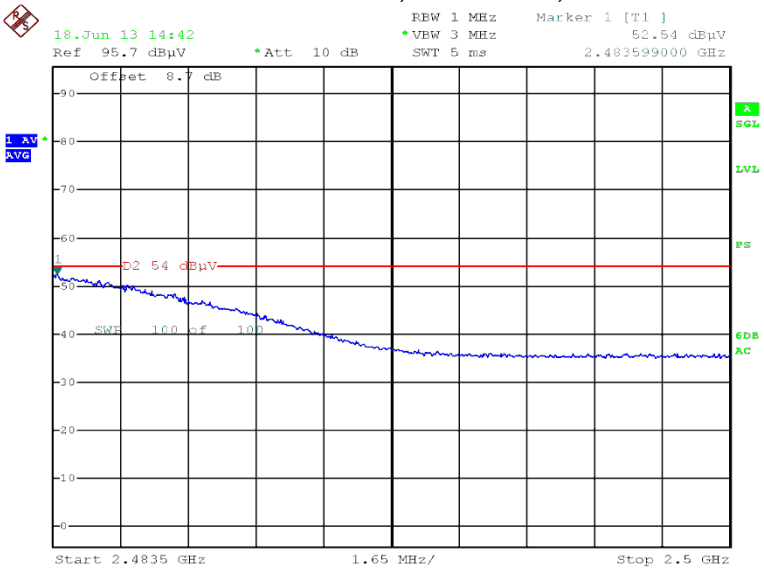


HIGH CHANNEL BANDEDGE, PEAK, VERT



Date: 18.JUN.2013 14:41:23

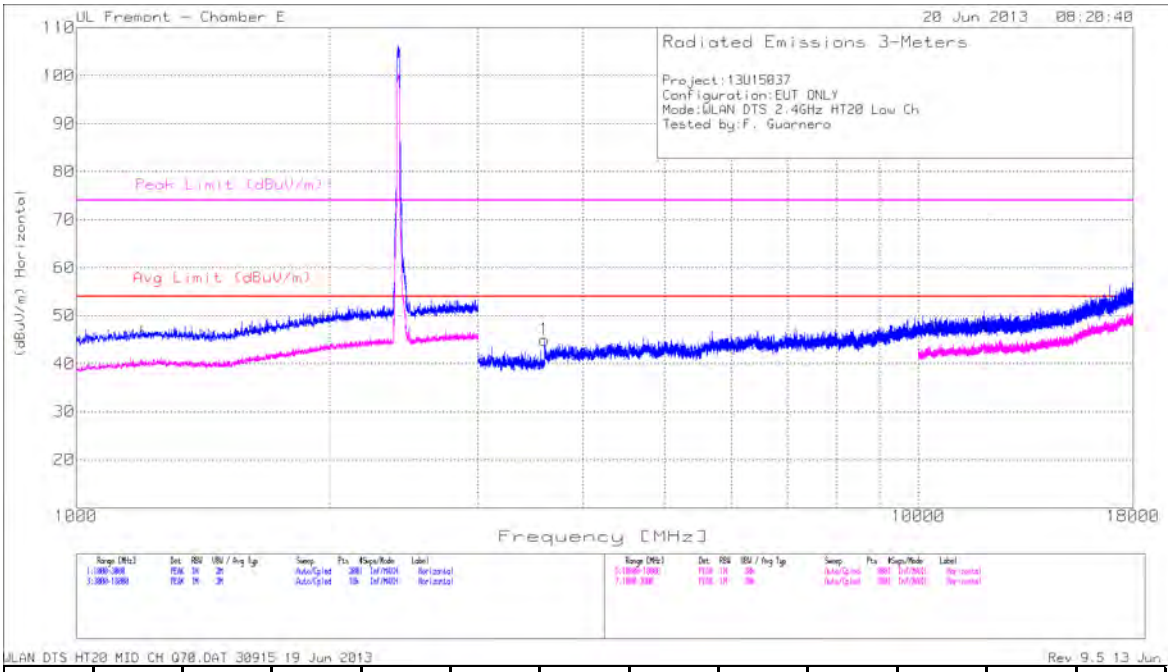
HIGH CHANNEL BANDEDGE, AVERAGE, VERT



Date: 18.JUN.2013 14:42:45

HARMONICS AND SPURIOUS EMISSIONS

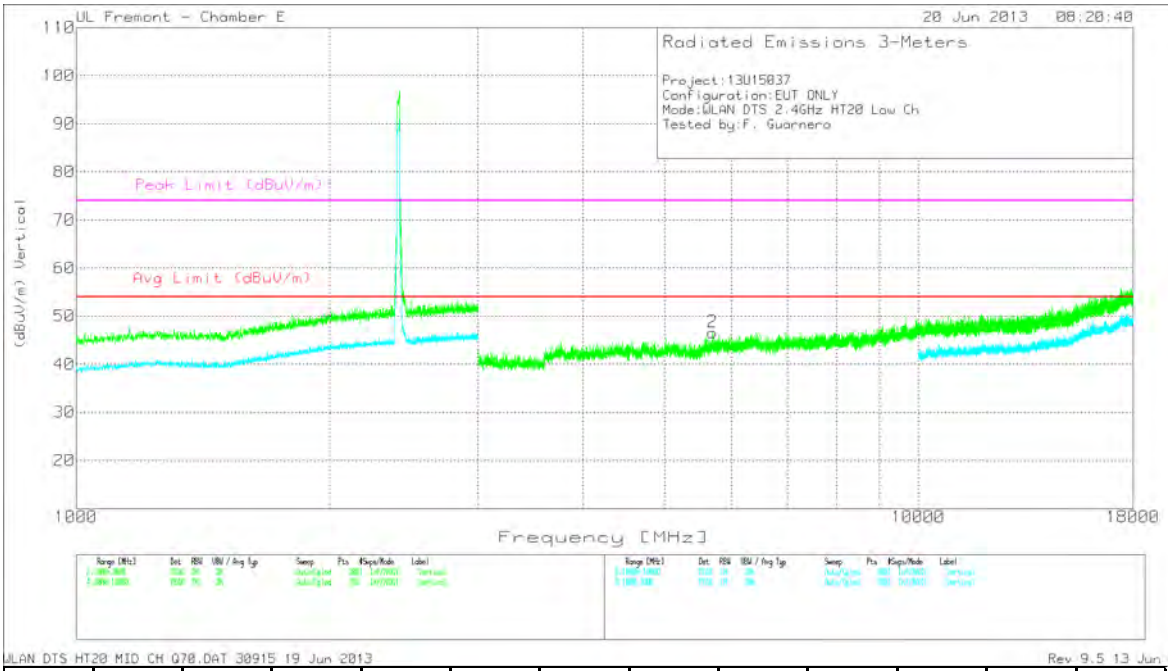
LOW CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	3.601	44.14	PK	33.3	-32.5	44.94	53.97	-9.03	74	-29.06	199	H

PK - Peak Detector

LOW CHANNEL VERTICAL

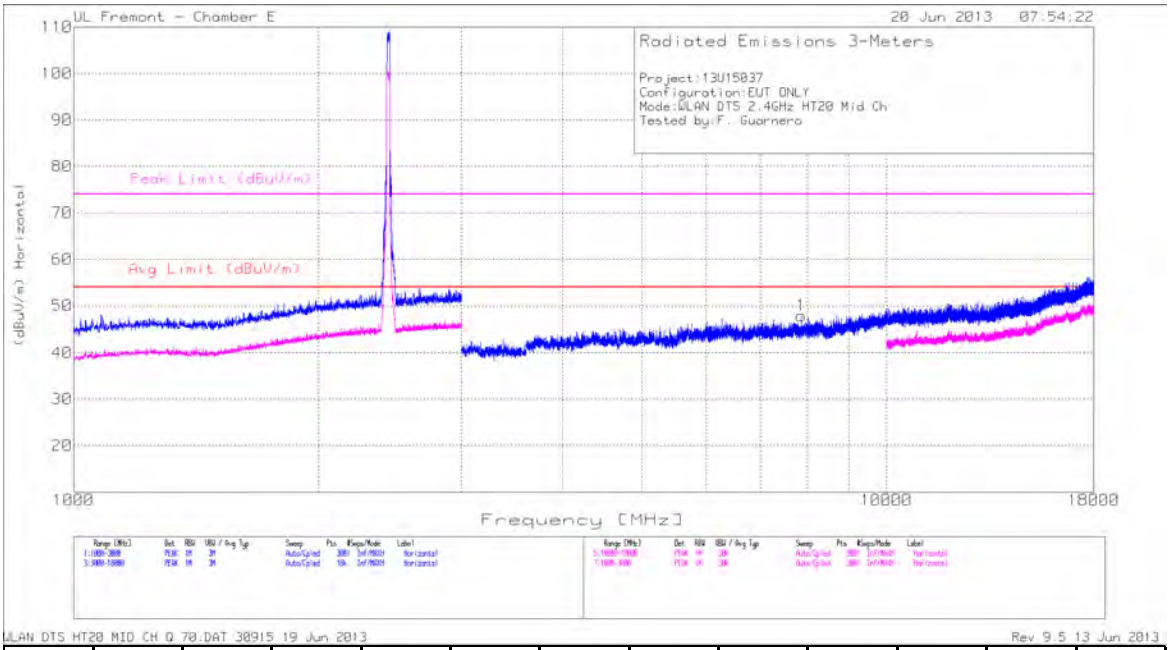


WLAN DTS HT20 MID CH Q70.DAT 30915 19 Jun 2013 Rev. 9.5 13 Jun

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
2	5.701	41.39	PK	35.3	-30.1	46.59	53.97	-7.38	74	-27.41	199	V

PK - Peak Detector

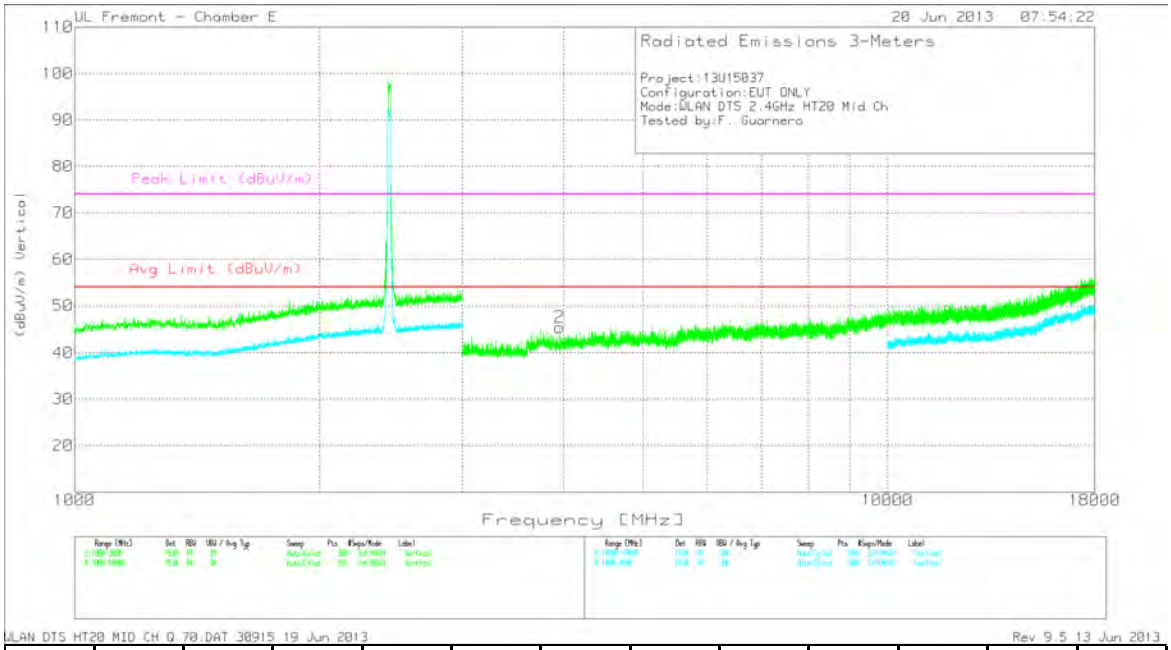
MID CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	7.86	40.2	PK	36.2	-28.6	47.8	53.97	-6.17	74	-26.2	199	H

PK - Peak Detector

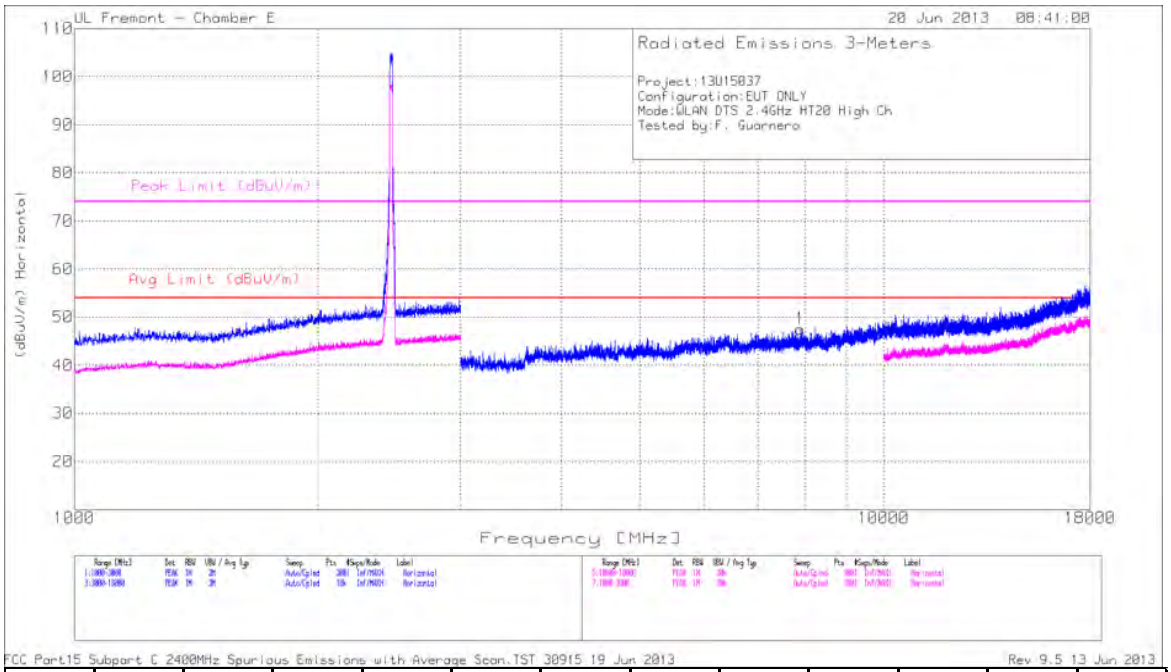
MID CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
2	3.953	43.88	PK	33.8	-32.3	45.38	53.97	-8.59	74	-28.62	199	V

PK - Peak Detector

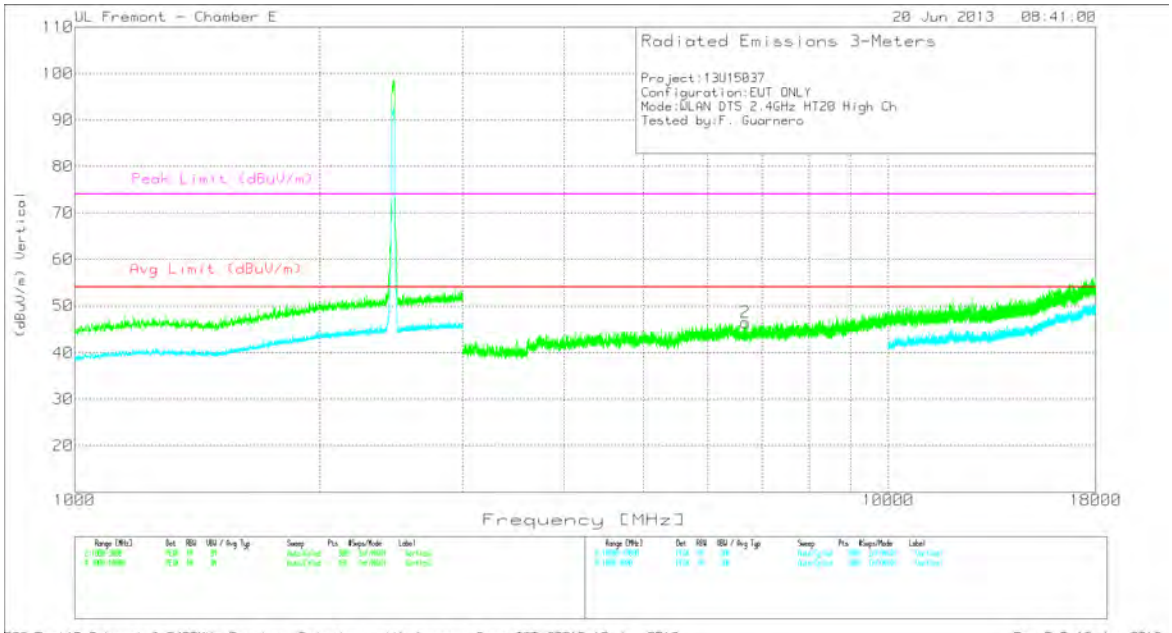
HIGH CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	7.894	39.5	PK	36.2	-28.2	47.5	53.97	-6.47	74	-26.5	199	H

PK - Peak Detector

HIGH CHANNEL VERTICAL



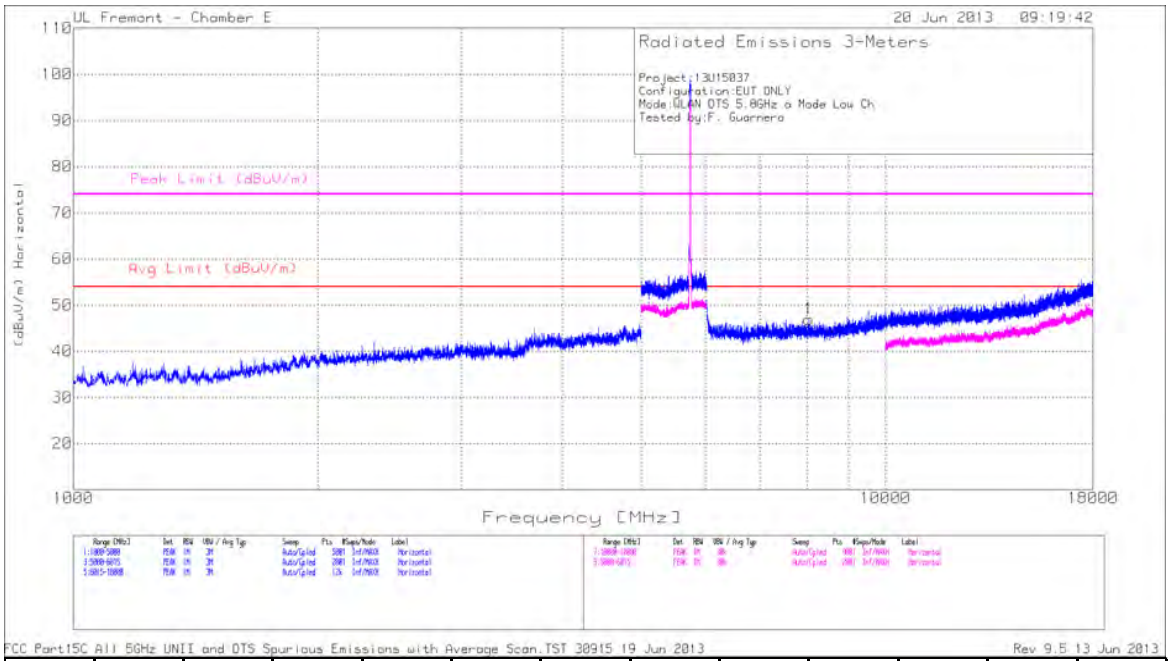
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
2	6.68	39.6	PK	35.8	-29	46.4	53.97	-7.57	74	-27.6	199	V

PK - Peak Detector

8.2.4. TX ABOVE 1 GHz 802.11a MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

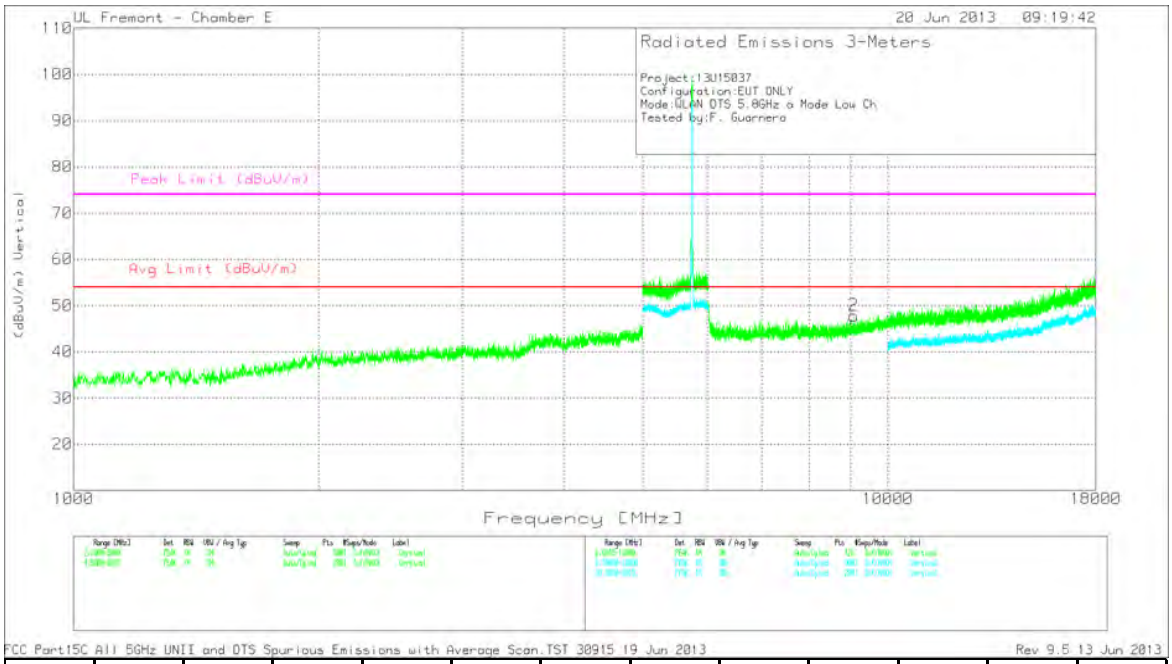
LOW CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	8.044	39.64	PK	36.2	-28.9	46.94	53.97	-7.03	74	-27.06	199	H

PK - Peak Detector

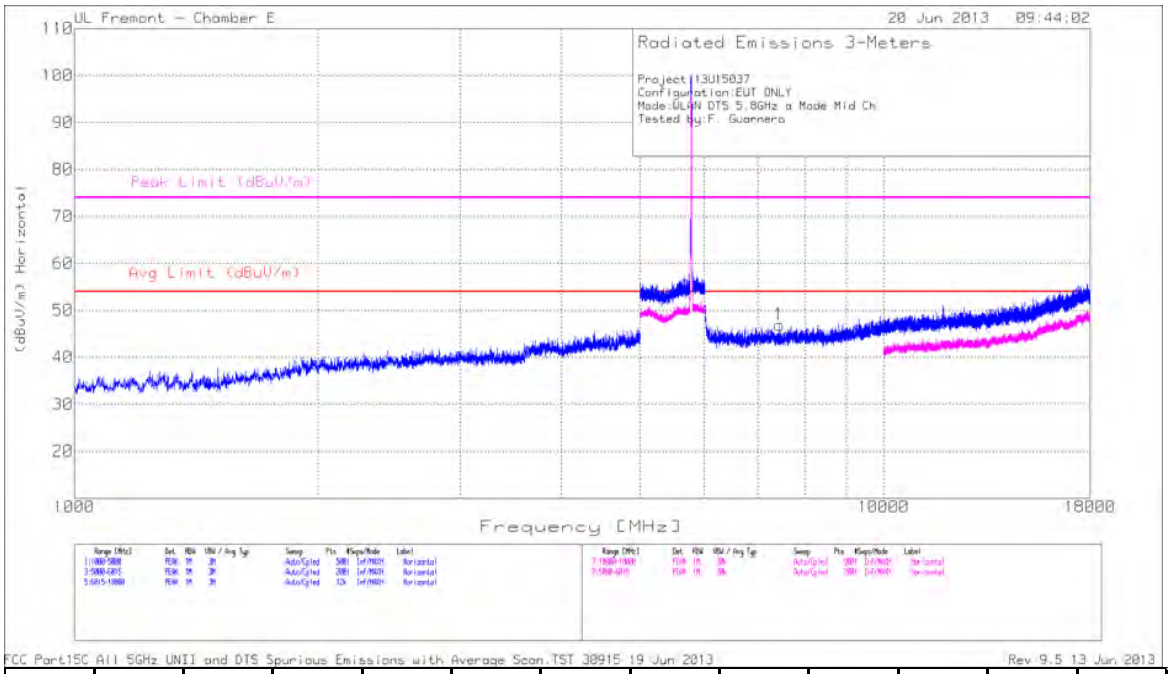
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
2	9.081	37.71	PK	36.9	-26.8	47.81	53.97	-6.16	74	-26.19	199	V

PK - Peak Detector

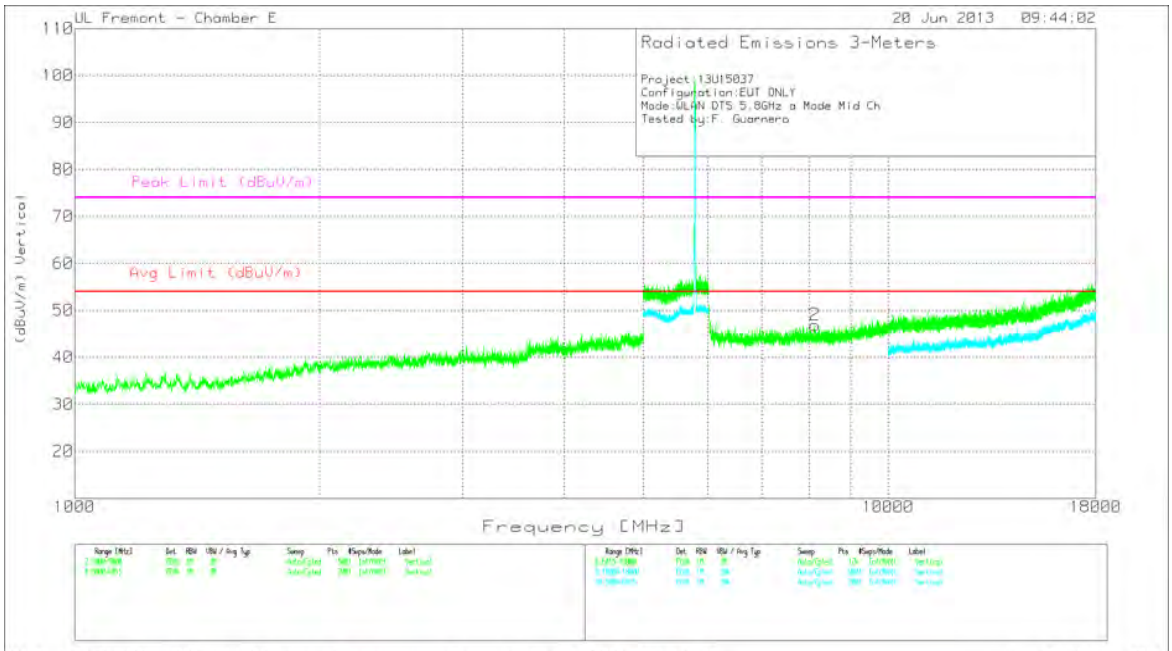
MID CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	7.435	40.19	PK	36.1	-29.4	46.89	53.97	-7.08	74	-27.11	199	H

PK - Peak Detector

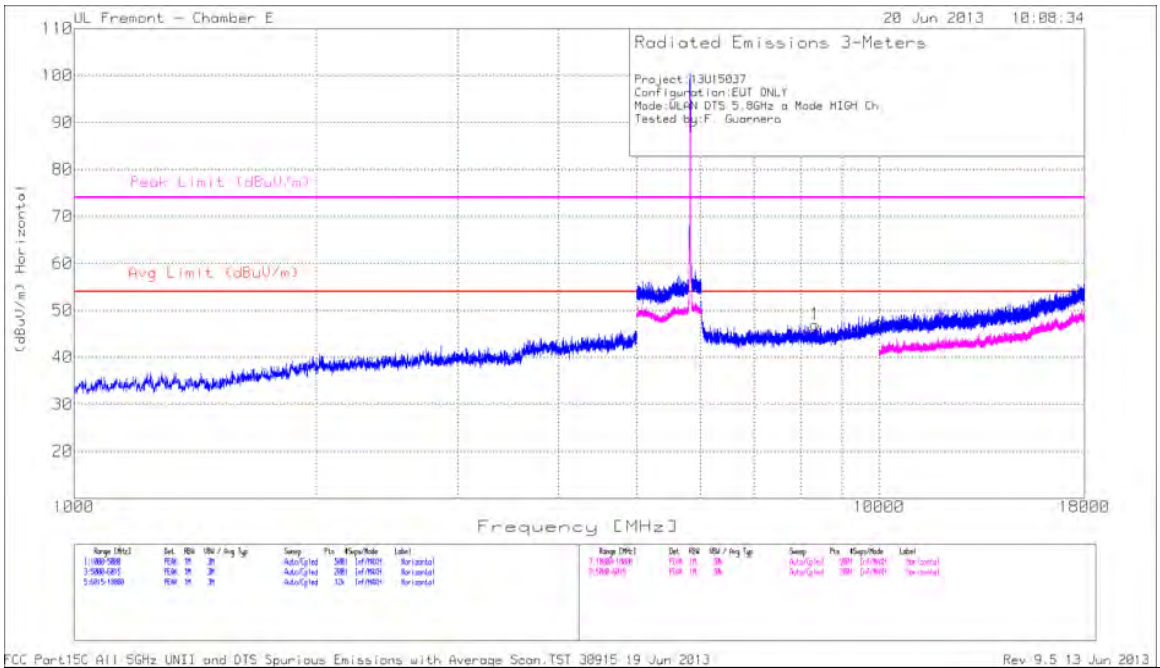
MID CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
2	8.129	39.15	PK	36.2	-28.5	46.85	53.97	-7.12	74	-27.15	199	V

PK - Peak Detector

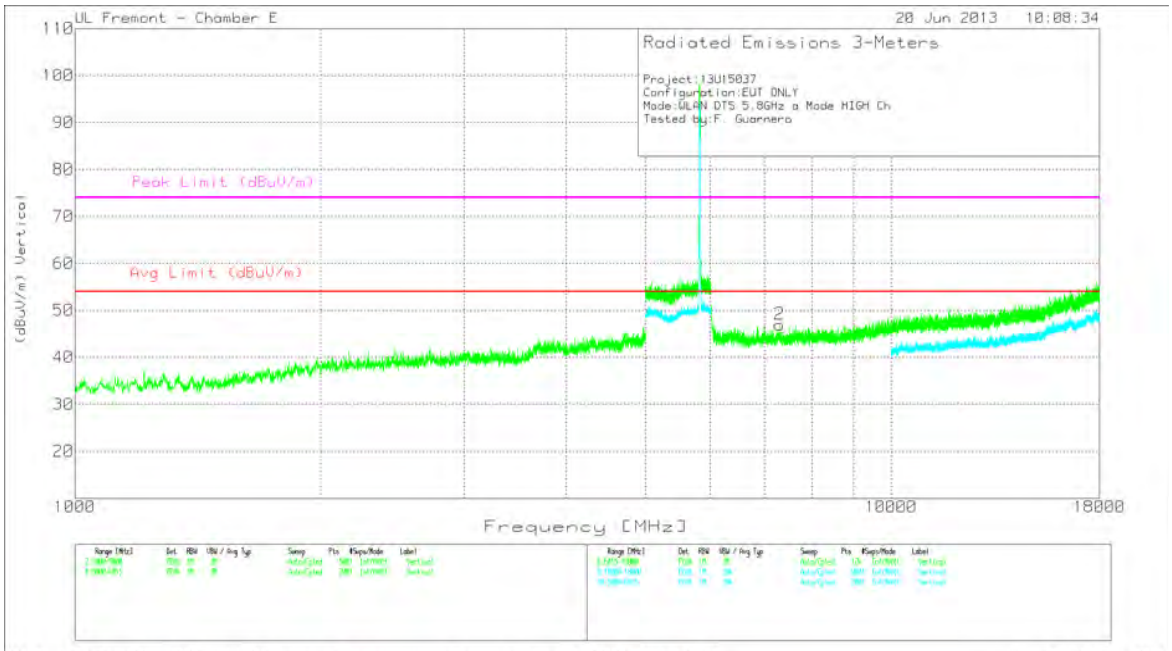
HIGH CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	8.341	38.76	PK	36.2	-28	46.96	53.97	-7.01	74	-27.04	199	H

PK - Peak Detector

HIGH CHANNEL VERTICAL



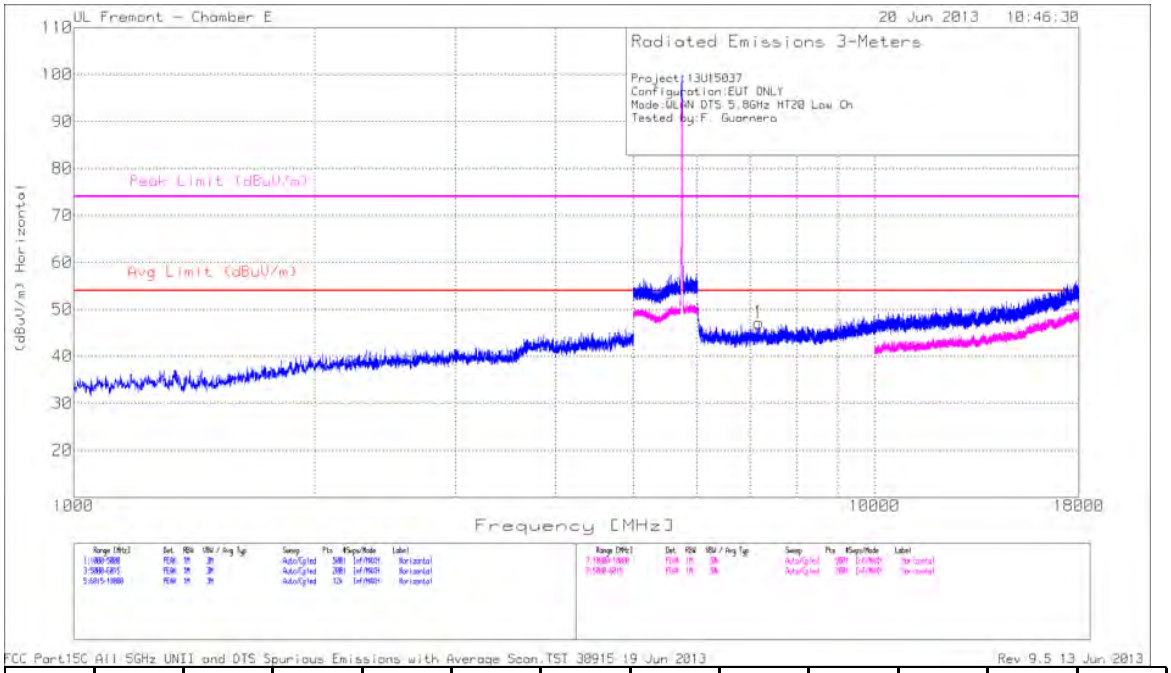
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
2	7.301	39.77	PK	36	-28.8	46.97	53.97	-7	74	-27.03	199	V

PK - Peak Detector

8.2.5. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

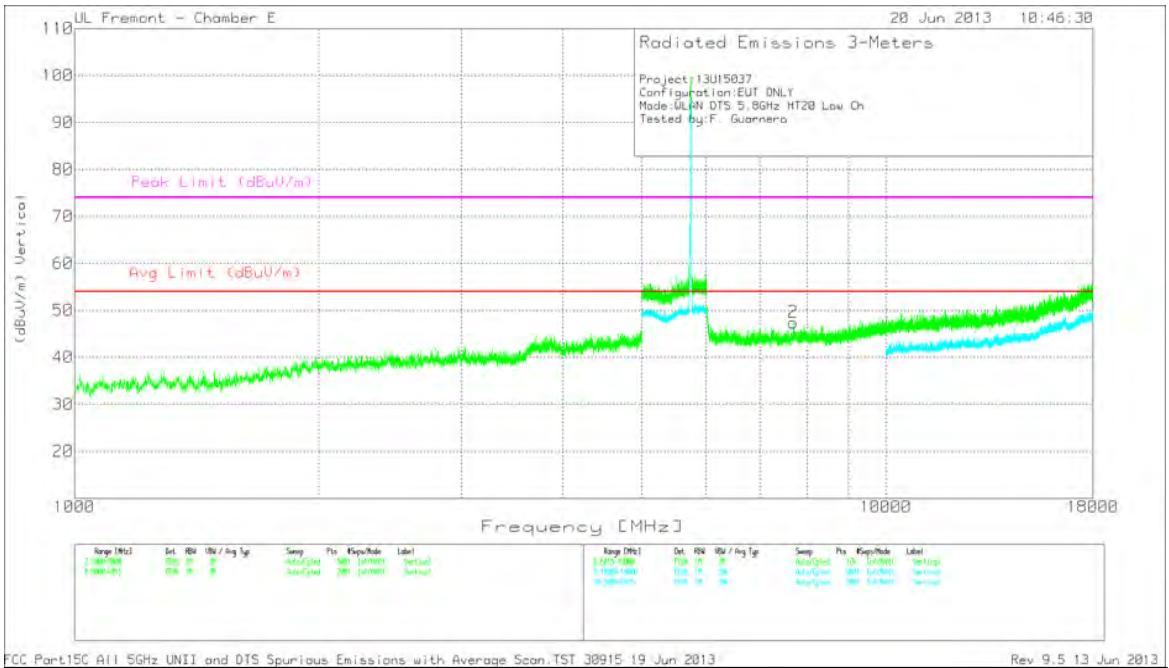
LOW CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	7.172	40.63	PK	36	-29.5	47.13	53.97	-6.84	74	-26.87	199	H

PK - Peak Detector

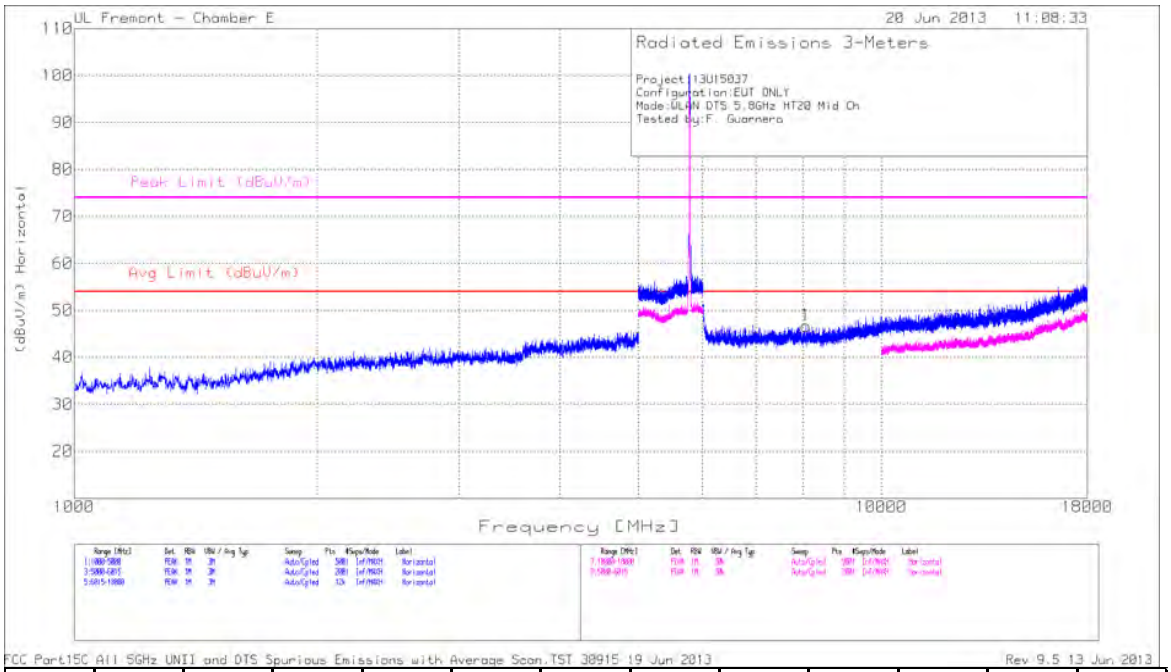
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
2	7.69	40.04	PK	36.2	-28.8	47.44	53.97	-6.53	74	-26.56	199	V

PK - Peak Detector

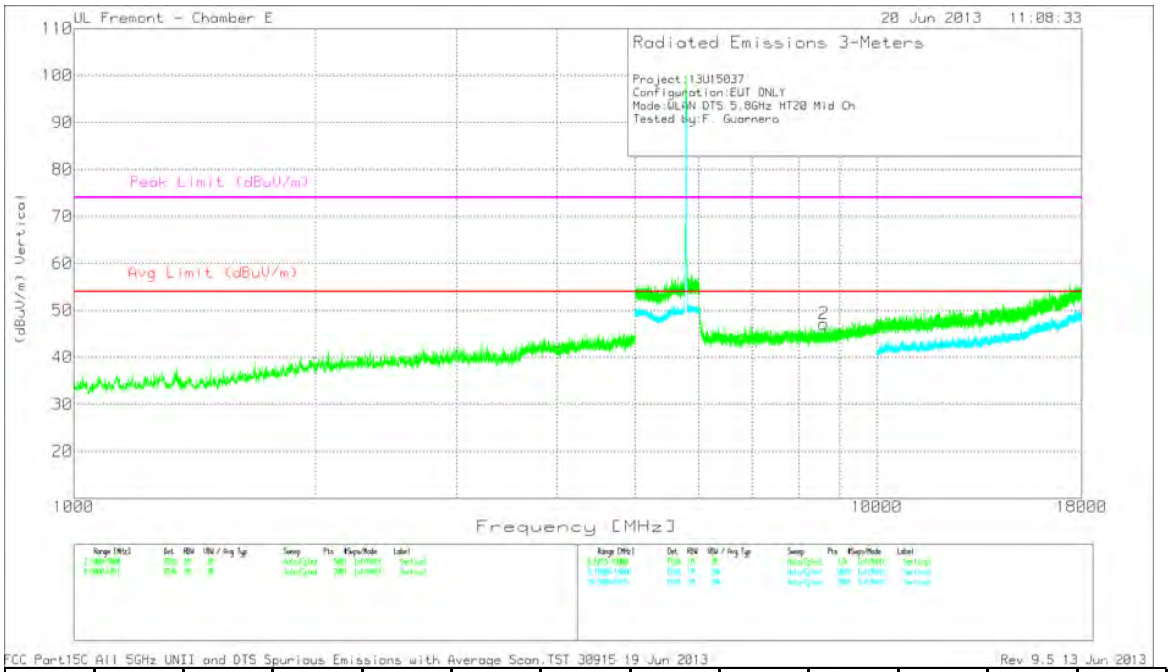
MID CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	8.071	39.31	PK	36.2	-28.8	46.71	53.97	-7.26	74	-27.29	199	H

PK - Peak Detector

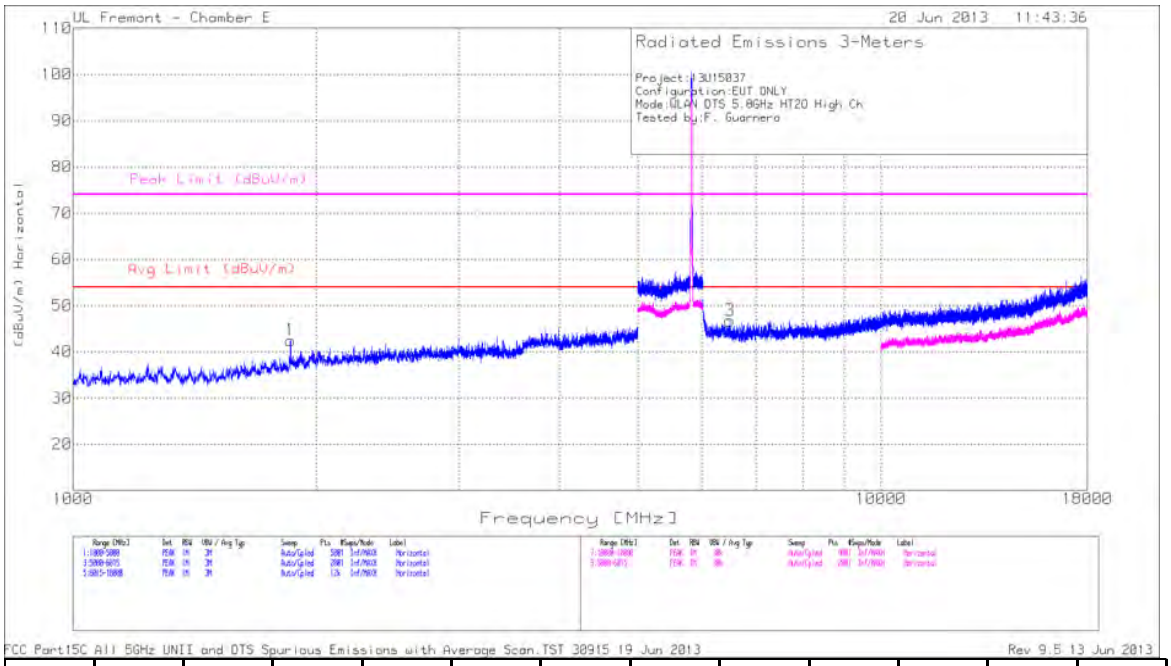
MID CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
2	8.596	38.22	PK	36.4	-27.5	47.12	53.97	-6.85	74	-26.88	199	V

PK - Peak Detector

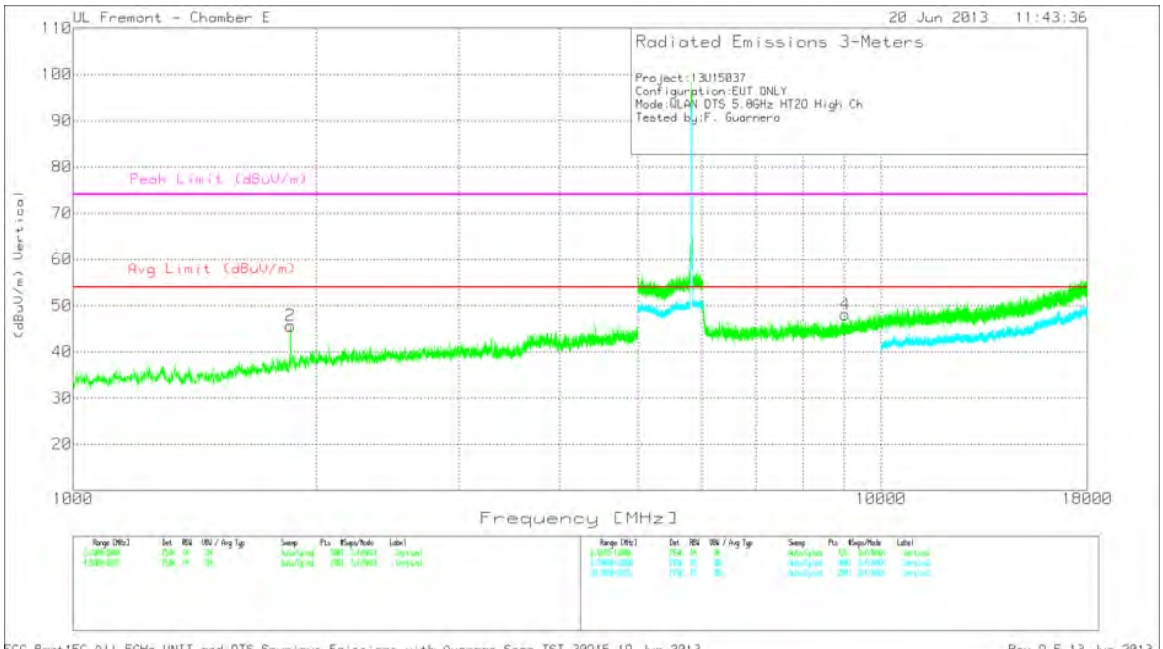
HIGH CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	1.858	45.45	PK	31.2	-34.2	42.45	53.97	-11.52	74	-31.55	199	H
3	6.498	40.43	PK	35.8	-29.5	46.73	53.97	-7.24	74	-27.27	199	H

PK - Peak Detector

HIGH CHANNEL VERTICAL



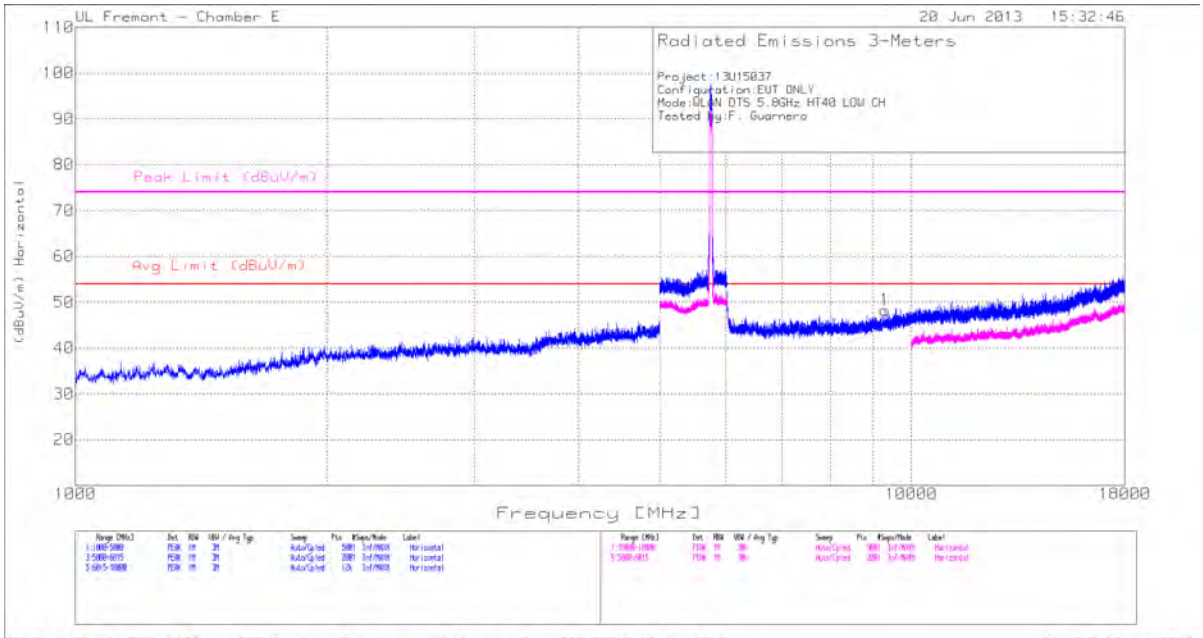
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/3GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
2	1.858	48.61	PK	31.2	-34.2	45.61	53.97	-8.36	74	-28.39	199	V
4	9.03	38.26	PK	36.8	-27	48.06	53.97	-5.91	74	-25.94	199	V

PK - Peak Detector

8.2.6. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL

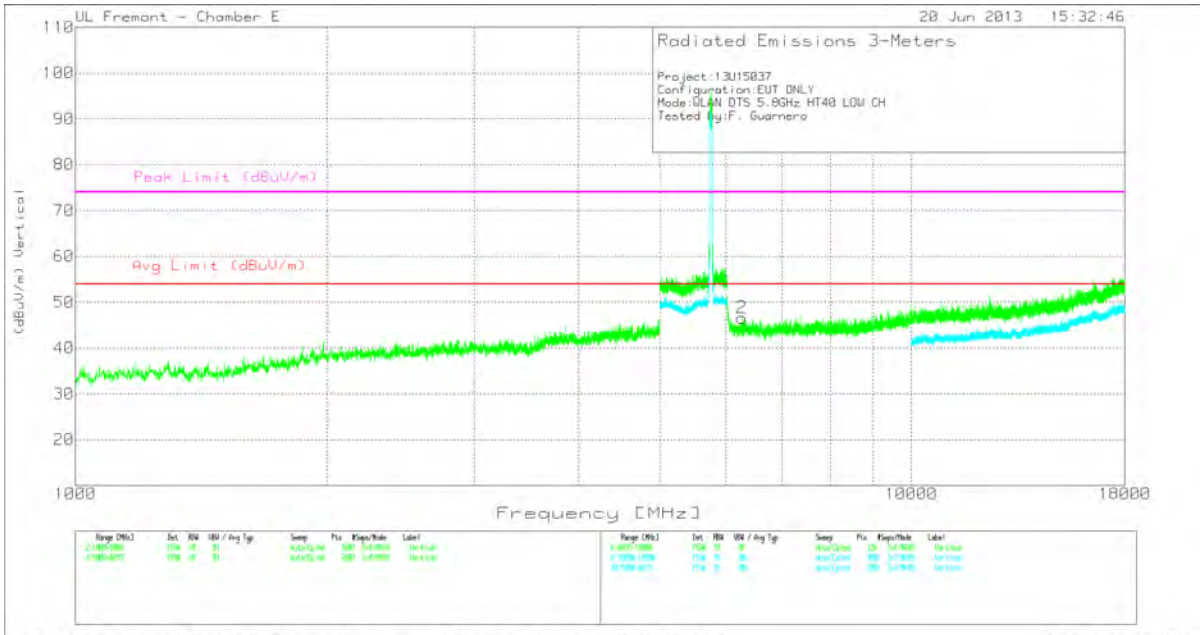


FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan TST 30915 19 Jun 2013 Rev 9.5 13 Jun 2013

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/6G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	9.3	37.19	PK	37.2	-26.1	48.29	53.97	-5.68	74	-25.71	199	H

PK - Peak detector

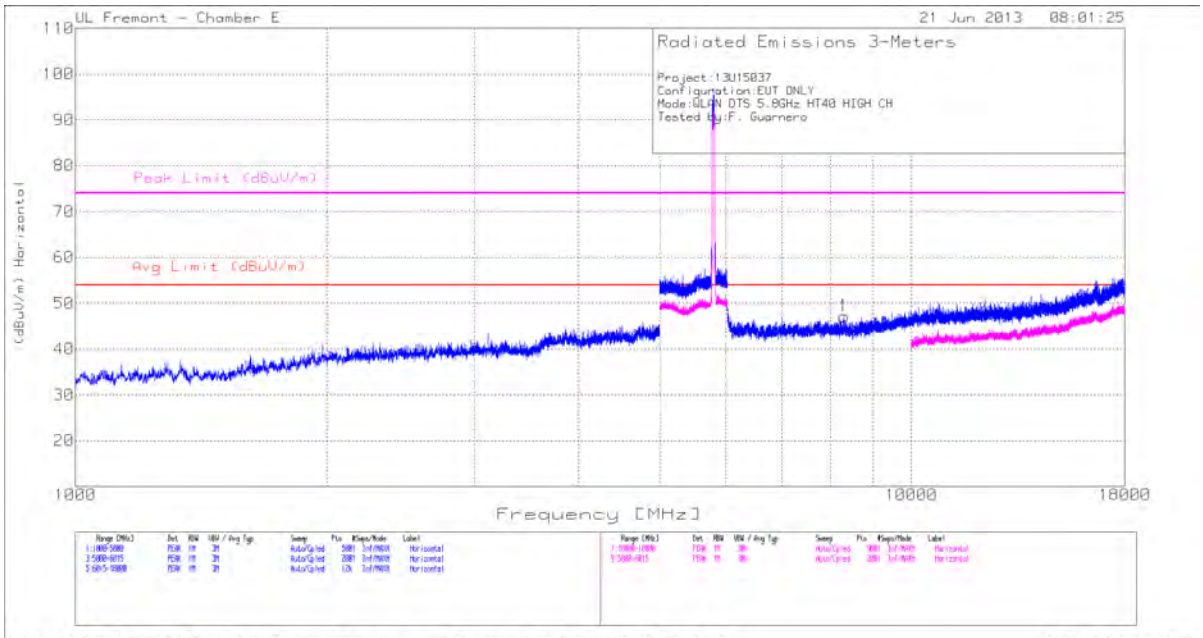
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/6G Hz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
2	6.27	40.7	PK	35.9	-30	46.6	53.97	-7.37	74	-27.4	199	V

PK - Peak detector

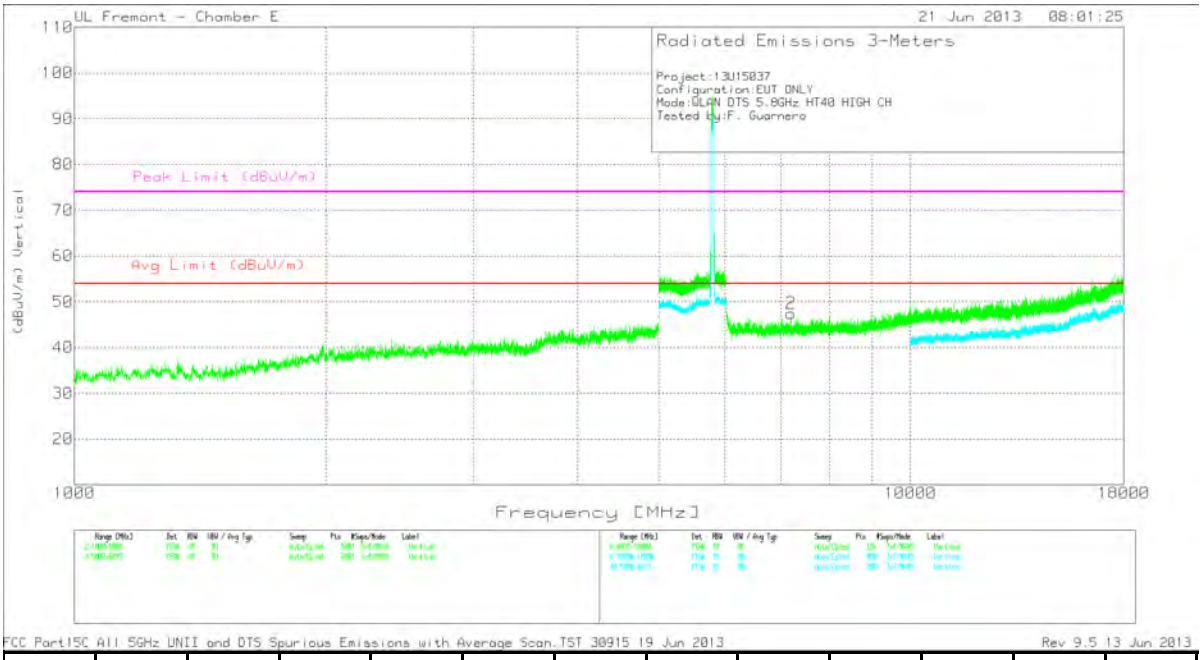
HIGH CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	8.306	38.73	PK	36.2	-27.8	47.13	53.97	-6.84	74	-26.87	199	H

PK - Peak detector

HIGH CHANNEL VERTICAL



FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30915 19 Jun 2013 Rev 9.5 13 Jun 2013

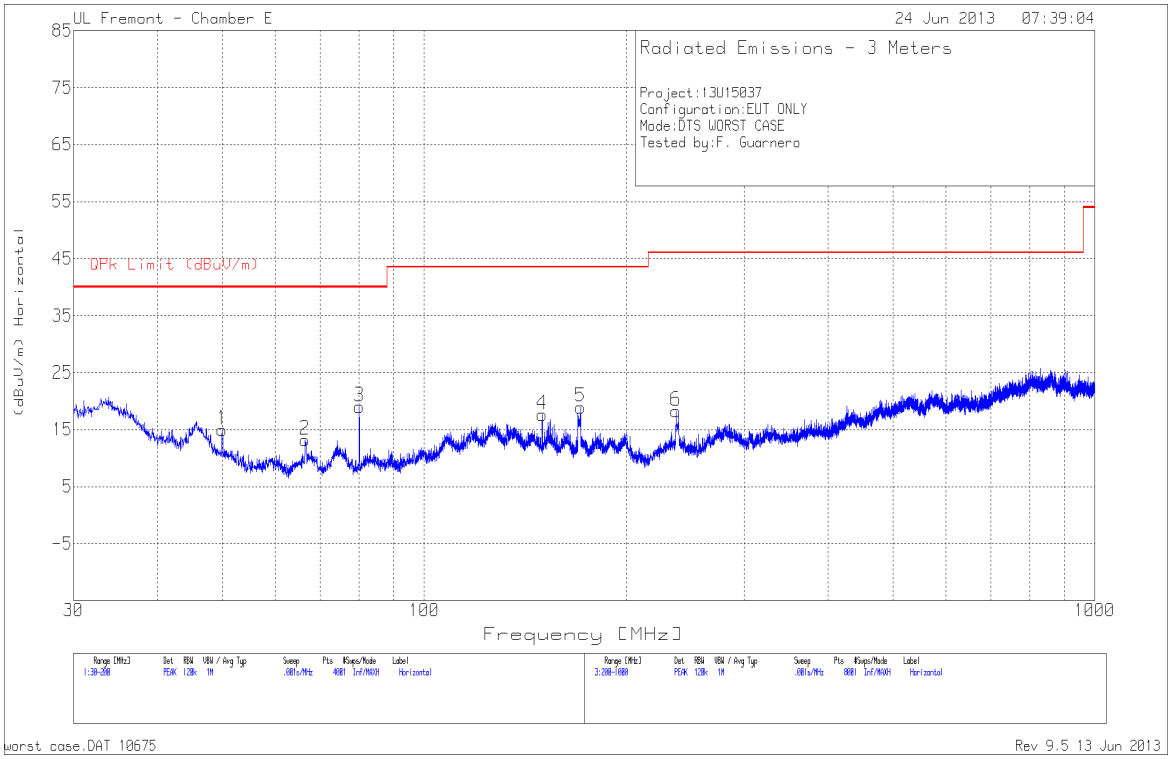
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/6GHz HPF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
2	7.195	40.85	PK	36	-29.4	47.45	53.97	-6.52	74	-26.55	199	V

PK - Peak detector

8.3. WORST-CASE BELOW 1 GHz

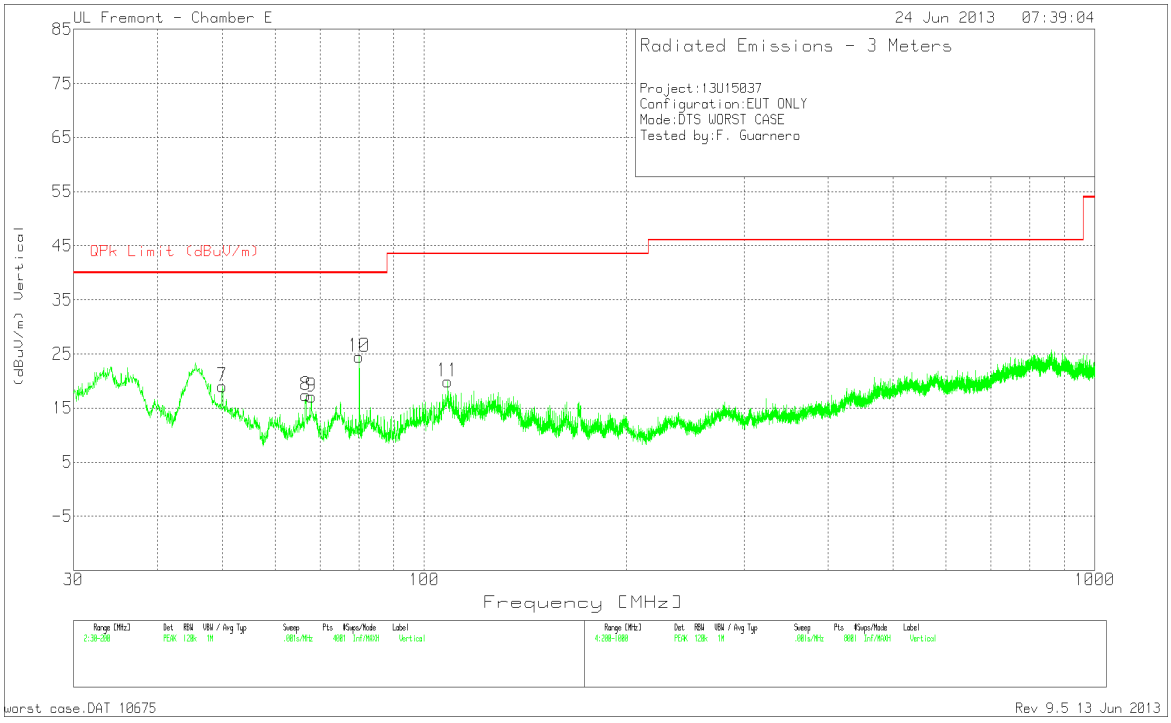
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL



SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, DATA)

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T408 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	49.975	34.77	PK	7.9	-27.7	14.97	40	-25.03	200	H
2	66.4225	33.17	PK	8.1	-28.1	13.17	40	-26.83	400	H
3	80.0225	39.01	PK	7.7	-27.7	19.01	40	-20.99	400	H
4	149.9988	32.63	PK	12.3	-27.3	17.63	43.52	-25.89	100	H
5	171.0575	34.55	PK	11.7	-27.3	18.95	43.52	-24.57	100	H
7	49.9963	38.85	PK	7.9	-27.7	19.05	40	-20.95	100	V
8	66.635	37.36	PK	8.1	-28.1	17.36	40	-22.64	100	V
9	67.91	36.93	PK	8.2	-28	17.13	40	-22.87	100	V
10	79.98	44.5	PK	7.7	-27.7	24.5	40	-15.5	100	V
11	108.455	35.71	PK	12.3	-28.1	19.91	43.52	-23.61	100	V
6	237.4	33.06	PK	11.4	-26.2	18.26	46.02	-27.76	100	H

PK - Peak detector

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

6 WORST EMISSIONS

Line-L1 .15 - 30MHz

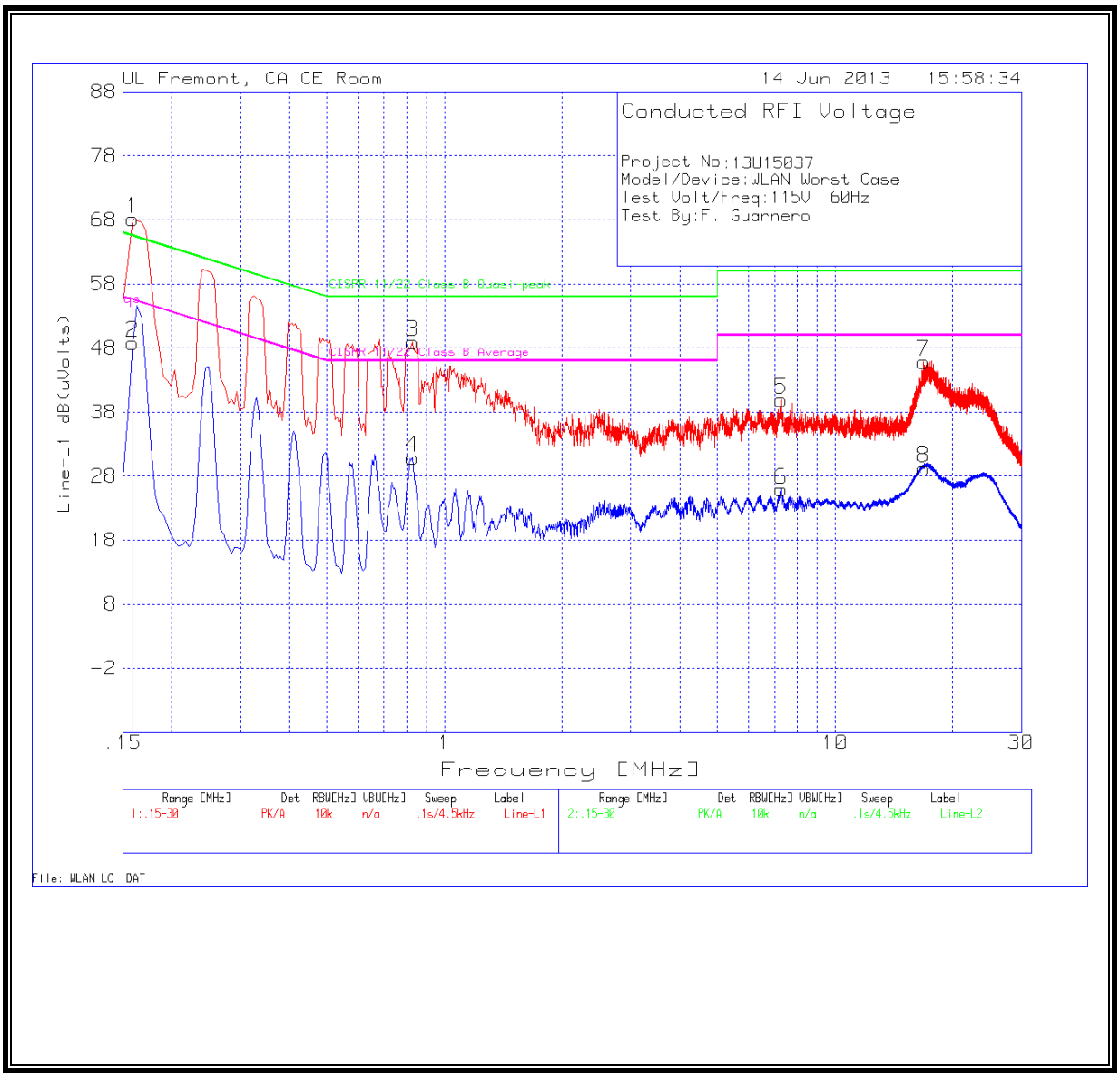
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin	CISPR 11/22 Class B Average	Margin
0.159	54.38	QP	0.1	0	54.48	65.52	-11.04	-	-
0.159	48.7	Av	0.1	0	48.8	-	-	55.5	-6.7
0.8295	48.8	PK	0.1	0	48.9	56	-7.1	-	-
0.8295	30.76	Av	0.1	0	30.86	-	-	46	-15.14
7.278	39.71	PK	0.1	0.1	39.91	60	-20.09	-	-
7.278	25.72	Av	0.1	0.1	25.92	-	-	50	-24.08
16.854	45.42	PK	0.2	0.2	45.82	60	-14.18	-	-
16.854	28.85	Av	0.2	0.2	29.25	-	-	50	-20.75

Line-L2 .15 - 30MHz

Test Frequency	Meter Reading	Detector	T24 IL L2.TXT (dB)	LC Cables 2&3.TXT (dB)	dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin	CISPR 11/22 Class B Average	Margin
0.1545	54.75	PK	0.1	0	54.85	65.8	-10.95	-	-
0.1545	40.25	Av	0.1	0	40.35	-	-	55.8	-15.45
0.78	42.3	PK	0.1	0	42.4	56	-13.6	-	-
0.78	24.89	Av	0.1	0	24.99	-	-	46	-21.01
2.4585	35.55	PK	0.1	0.1	35.75	56	-20.25	-	-
2.4585	22.07	Av	0.1	0.1	22.27	-	-	46	-23.73
17.5425	42	PK	0.2	0.2	42.4	60	-17.6	-	-
17.5425	29.72	Av	0.2	0.2	30.12	-	-	50	-19.88

PK - Peak detector
QP - Quasi-Peak detector
Av - Average detector

LINE 1 RESULTS



LINE 2 RESULTS